

FUNDING AND BENEFITS POLICY THE EDMONTON PIPE INDUSTRY PENSION PLAN

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Introduction

The Edmonton Pipe Industry Pension Plan (the “Plan”) was established on October 1, 1968 (the “Effective Date of the Plan”) to provide retirement pensions and related benefits (the “Retirement Benefits”) for members of Local Union 488 (the “Union”) employed in the plumbing and pipefitting industry.

The Plan is structured as a combination of defined benefits for members, funded through defined contributions (the “Standard Contribution Rates”) that are stipulated in the applicable Collective Agreements between the Union and the Participating Employers.

This type of arrangement is considered a collectively bargained multi-employer plan (a “CBMEP”) under the Employment Pension Plans Act (the “EPPA”) of Alberta and is registered as a specified multi-employer plan (a “SMEP”) under the Income Tax Act of Canada.

The Plan is governed by a Board of Trustees (the “Board”) who has been appointed to act in accordance with the provisions of a pension trust agreement (the “Trust Agreement”) which was amended and restated as of August 13, 2007. The Board is comprised of one appointed union representative, three elected union representatives, two independent trustees and an independent Chair.

The “Mission” of the Board includes:

- Contributing to the well being of the Plan Members and Beneficiaries by providing reasonable retirement pensions and related benefits based on the financial resources available from The Edmonton Pipe Industry Pension Trust Fund (the “Trust Fund”).
- Providing high quality service to Plan Members and Participating Employers in an effective and efficient manner.
- Ensuring good governance of the Trust Fund including the prudent investment of assets and cost effective management.

Delivering retirement pensions and related benefits which are reasonable in relation to the level of contributions remitted to the Trust Fund.

To assist in the realization of the stated mission and to be consistent with the terms of the Trust Agreement, the Board has developed and adopted this Funding and Benefits Policy (the "Policy"). Specifically, this Policy's goals include, but need not be limited to:

- promoting and achieving security of the benefits promised to the Plan Members,
- setting forth rational and systematic funding and benefit guidelines to assist the Board in the proper governance of the Plan,
- identifying and assessing the financial and other risks to which the Plan and the Plan Members are exposed,
- adding structure and discipline to the monitoring and oversight duties of the Board, and
- establishing principles to be applied when considering any enhancements or improvements to the retirement pensions and related benefits promised under the Plan.

The Policy reflects the on-going development and evolution in the approaches and methods used to evaluate the financial position of the Plan. It is the intent of the Board to review the Policy on an annual basis, coincident with the end of each Plan Year, and to amend it where necessary. As such it should be viewed as a work in progress which will continue to change over time. One component of the Policy is full and complete disclosure which will permit the Board, Plan Members, and regulators to assess more easily the levels and types of risk to which the Plan and the Plan Members are subjected.

The funded position of the Plan reflects the economic environment in recent years. The following tables illustrate the financial condition of the Plan at successive fiscal year-ends from September 30, 1999 to December 31, 2018, inclusive:

Going Concern Valuation

Actuarial Valuation	In \$millions			
	Actuarial Value of Assets	Accrued Liabilities ¹	Funded Ratio	Assumed Investment Return ²
As at September 30				
1999	\$194.3	\$239.3	81%	7.00%
2000	\$226.4	\$287.2	79%	6.75%
2001	\$232.5	\$331.2	70%	7.00%
2002	\$250.2	\$366.1	68%	6.50%
2003	\$300.4	\$409.5	73%	6.25%
2004	\$351.1	\$445.4	79%	6.25%
2005	\$428.8	\$483.3	89%	6.25%
2006	\$497.5	\$522.6	95%	6.25%
2007	\$577.0	\$564.5	102%	6.25%
2008	\$590.1	\$627.9	94%	6.25%
2009	\$693.4	\$704.1	98%	6.25%
2010	\$813.5	\$815.7	99%	5.90%
As at December 31				
2011	\$911.4	\$961.6	95%	5.50%
2012	\$1,051.7	\$1,031.8	102%	5.50%
2013	\$1,292.2	\$1,116.8	116%	5.50%
2014	\$1,461.7	\$1,148.4	127%	5.76%
2015	\$1,604.6	\$1,240.3	129%	5.59%
2016	\$1,737.2	\$1,327.2	131%	5.53%
2017	\$1,918.2	\$1,455.0	132%	5.15%
2018	\$1,946.1	\$1,433.0	136%	5.42%

¹ Effective December 31, 2014 the accrued liabilities are calculated using the benchmark discount rate as described in the Act, prior to the application of a prescribed Provision for Adverse Deviations.

² Effective December 31, 2014, the Trustees elected a moratorium from funding solvency special payments and set the assumed investment return equal to the benchmark discount rate as described in the Act.

Solvency Valuation

Actuarial Valuation	In \$millions			Solvency Interest Rates	
	MV of Assets	Solvency Liabilities	Solvency Ratio	CIA TV Basis ^{3,4,5,6}	Annuity Proxy Rate ^{4,5,7}
As at September 30					
1999	\$196.7	\$236.3	83%	6.25%	6.10%
2000	\$239.2	\$259.1	92%	6.50%	6.20%
2001	\$231.2	\$284.3	81%	6.50%	6.10%
2002	\$249.0	\$333.6	75%	6.25%	5.50%
2003	\$299.2	\$367.5	81%	6.00%	5.20%
2004	\$349.8	\$412.0	85%	5.75%	5.00%
2005	\$427.6	\$513.0	83%	4.25%-5.25%	4.66%
2006	\$496.2	\$571.8	87%	4.75%-5.00%	4.55%
2007	\$575.7	\$591.0	97%	5.25%-5.00%	4.89%
2008	\$588.8	\$681.9	86%	4.00%-5.00%	4.65%
2009	\$692.1	\$751.8	92%	3.80%-5.60%	4.37%
2010	\$812.2	\$851.9	95%	3.60%-5.30%	4.37%
As at December 31					
2011	\$910.1	\$1,146.2	79%	2.60%-4.10%	3.31%
2012	\$1,050.4	\$1,326.3	79%	2.40%-3.60%	2.96%
2013	\$1,290.9	\$1,205.6	107%	3.00%-4.60%	3.93%
2014	\$1,460.4	\$1,523.2	96%	2.50%-3.80%	2.82%
2015	\$1,603.3	\$1,673.8	96%	2.10%-3.70%	3.12%
2016	\$1,735.9	\$1,788.5	97%	2.20%-3.50%	3.19%
2017	\$1,916.7	\$1,716.5	112%	5.15%	3.09%
2018	\$1,944.6	\$1,711.8	114%	5.42%	3.23%

³ Prior to 2005, the CIA Transfer Value Basis refers to the interest rate for a 15 year select period, after which a fixed interest rate of 6.0% per year applies for the purpose of calculating a "Commuted Value". Effective February 1, 2005, the interest rate basis is changed to a medium-term variable rate for a 10 year select period and a long-term variable rate thereafter.

⁴ Effective February 1, 2011, the Annuity Proxy Rate and the CIA Transfer Value rate are applied in conjunction with the UP-1994 Mortality Table (generational basis).

⁵ Effective October 1, 2015 and September 30, 2015, the Annuity Proxy Rate and the CIA Transfer Value rate, respectively, are applied in conjunction with the CPM2014 Mortality Table combined with the CPM-B mortality improvement scale.

⁶ Effective December 7, 2017, the CIA Transfer Value basis is applied on a Going Concern basis.

⁷ Prior to 2005, the Annuity Proxy Rate is applied in conjunction with the GAM-83 Mortality Table. Effective February 1, 2005, the Annuity Proxy Rate is applied in conjunction with the UP-1994 Mortality Table (with projection to 2015).

Contribution Rate Requirements

Actuarial Valuation	In \$ per hour worked					
	Negotiated Contributions	Current Service Cost	PfAD ⁸ (\$)	Special Payments	Margin (\$)	Margin (%)
As at September 30						
1999	\$3.498	\$2.752	N/A	\$1.060	(\$0.314)	(9.0%)
2000	\$3.927	\$2.482	N/A	\$1.090	\$0.355	9.0%
2001	\$4.293	\$2.503	N/A	\$1.847	(\$0.057)	(1.3%)
2002	\$4.939	\$2.476	N/A	\$2.450	\$0.013	0.3%
2003	\$4.960	\$2.662	N/A	\$2.079	\$0.219	4.4%
2004	\$5.210	\$2.779	N/A	\$1.975	\$0.456	8.8%
2005	\$5.293	\$2.571	N/A	\$2.399	\$0.323	6.1%
2006	\$5.410	\$2.572	N/A	\$2.234	\$0.604	11.2%
2007	\$5.835	\$2.503	N/A	\$0.455	\$2.877	49.3%
2008	\$6.135	\$2.483	N/A	\$2.082	\$1.570	25.6%
2009	\$6.435	\$2.685	N/A	\$1.678	\$2.072	32.2%
2010	\$6.610	\$3.943	N/A	\$0.846	\$1.821	27.5%
As at December 31						
2011 ⁹	\$6.610	\$4.692	N/A	\$0.541	\$1.377	20.8%
2012	\$6.610	\$4.732	N/A	\$0.000	\$1.878	28.4%
2013	\$6.610	\$4.774	N/A	\$0.000	\$1.836	27.8%
2014	\$6.610	\$4.728	\$0.244	\$0.000	\$1.638	24.8%
2015	\$6.610	\$4.898	\$0.452	\$0.000	\$1.260	19.1%
2016	\$6.610	\$5.147	\$0.710	\$0.000	\$0.753	11.4%
2017	\$6.610	\$5.626	\$0.773	\$0.000	\$0.211	3.19%
2018	\$6.610	\$5.512	\$0.743	\$0.000	\$0.355	5.37%

⁸ Provision for Adverse Deviation (PfAD) is required as a result of electing a moratorium from funding solvency special payments effective January 1, 2015.

⁹ The margin is determined using the contribution requirements developed in conjunction with the temporary solvency moratorium permitted under the Employment Pension Plans Act of Alberta. If the temporary solvency funding relief were not applied, the current service cost effective from the December 31, 2011 valuation would be \$4.692, the special payments would be \$4.260 and the margin would be -\$2.34 per hour, or -35.4%. Effective with the filing of the December 31, 2013 valuation, the solvency moratorium was revoked by the trustees.

NB: The Negotiated Contributions represent the average of the Contribution Rates expected per hour worked over the twelve months following the date of the actuarial valuation. The history of the Industrial and Commercial Contribution Rates per hour worked, and their effective dates, is as follows:

Effective Date	Industrial	Commercial
	Contribution Rate	Contribution Rate
May 1, 1994	\$2.81 per hour	\$2.81 per hour
November 1, 1999	\$3.56 per hour	\$3.56 per hour
November 1, 2000	\$3.96 per hour	\$3.96 per hour
May 1, 2001	\$4.21 per hour	\$3.96 per hour
November 1, 2001	\$4.46 per hour	\$3.96 per hour
May 1, 2002	\$4.71 per hour	\$3.96 per hour
November 1, 2002	\$4.96 per hour	\$3.96 per hour
May 1, 2004	\$5.21 per hour	\$3.96 per hour
May 1, 2006	\$5.41 per hour	\$3.96 per hour
October 1, 2007	\$5.71 per hour	\$3.96 per hour
May 1, 2008	\$6.01 per hour	\$4.56 per hour
May 1, 2009	\$6.31 per hour	\$4.86 per hour
May 1, 2010	\$6.61 per hour	\$5.16 per hour
May 1, 2011	\$6.61 per hour	\$5.75 per hour
May 1, 2012	\$6.61 per hour	\$6.00 per hour

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Objectives of the Board of Trustees

The following points summarize the objectives and the mission of the Board as they pertain to the Plan Members.

1. Providing Plan Members with the maximum level of retirement income that can be provided by the employer contributions paid to the Fund plus the investment earnings thereon.

Through their participation in the Plan, the members receive part of their total compensation package in the form of contributions to the Plan in lieu of wages. One objective is to provide members with the best possible Retirement Benefits which can be supported by the contributions remitted to the Fund and its investment earnings. This would suggest the selection of investments which will deliver the highest yield over the long term and would not be inconsistent with the adoption of a higher rate of return assumption for funding purposes. These types of investments tend to be more volatile which can expose the Plan and members to higher levels of risk.

2. Providing sustainable Retirement Benefits

Individuals can work their entire careers in preparation for their retirement. One of the advantages of a defined benefit plan is that it provides a Plan member with the ability to determine, in advance, the level of retirement income they will have accumulated at their anticipated retirement date. Such projections can influence an individual's behaviour in many ways, including the extent to which an individual may save for retirement outside of the pension plan.

Accordingly, once a benefit has been provided or promised, it is extremely undesirable to reduce such benefits. In other words, the promise must be sustainable. This would suggest the selection of investments which will deliver more moderate but stable yields over the long term and would not be inconsistent with the adoption of a lower rate of return assumption for funding purposes. Consistent with the nature of the returns produced by these types of investments, the risks to the Plan and Plan Members are reduced.

3. Achieving equity between various classes and generations of Plan Members

As stated above, the retirement income provided to individuals participating in this type of pension plan results from deferred wages. In this type of environment, it is desirable to avoid the creation of intergenerational transfers of wealth. For the purposes of the pension plan, a generation is best defined as a group of individuals born at about the same time and working within the industry. Intergenerational transfers occur when contributions of one group and the investment income earned in respect of those contributions are used to provide benefits for another group. Ideally, the contributions of each generation of members, plus the investment income associated with such contributions, should be applied to provide benefits for that generation of members. This would suggest approaching the funding basis from a "best estimate" perspective.

When the Plan was first established in 1968, a base level of pension was provided to retirees regardless of the number of years of contributions which were remitted to the fund on their behalf. The decision to provide these benefits reflected the effort and commitment that these members had made to the development and growth of the Local and the industry during their working careers when no pension plan existed. In the years that ensued, as the funding of the pension plan increased, these base benefits were increased to levels which would enable these members to maintain a reasonable standard of living in their retirement years. Thus, at that time the Board explicitly provided for a transfer of wealth within the pension plan from the working members to the retirees who helped build the industry.

The Board may, from time to time, implement benefit improvements or other changes that result in a transfer of wealth within the pension plan from one class of members to another class. For example, any increase to the pensions of retired members will be financed by contributions from active members. On the other hand, some of the experience gains of the Plan will be attributable to the liabilities of the retired members and the assets backing those liabilities. These gains would offset the costs borne by the active membership towards the increase to pensions in pay. In these situations the Board will estimate as best as possible the costs transferred from one class of members to the other class, and endeavour to ensure that such costs are reasonable.

At any point in time, the Plan membership consists of different classes of individuals. Members within any class share certain attributes and have traits in common. Examples of different classes include active union members, active permit workers, apprentices, deferred members in good standing with the union, deferred members expelled from the union, pensioners in good standing with the union and their beneficiaries, and pensioners expelled from the union and their beneficiaries. Where differences in benefits and provisions do exist between the various classes, it is desirable that the differences be reasonable and defensible.

4. Distributing the responsibilities of planning for retirement

The retirement income for the majority of Canadians will originate from the following three sources:

- Government provided
- Employment related
- Individual savings

The government of Canada provides basic retirement income by means of the Canada Pension Plan and Old Age Security. For individuals working within the pipefitting industry, these programs alone are insufficient to maintain the standard of living enjoyed prior to retirement over the individual's remaining lifetime. The remaining shortfall is reduced by the combined retirement income derived from the pension plan and each member's individual savings.

The defined benefit design of the Plan provides members with an estimate of their Retirement Benefit in relation to their expected service in the industry on the assumption that the Plan continues on a going concern basis. The “locking-in” provisions required under the provincial legislation ensure that the retirement savings are ultimately used to provide periodic income after retirement and protect against the diversion of the funds for other uses.

The mandatory nature of the government benefits and the negotiated nature of the contributions made to the Plan ensure that Plan members will have a basic floor of income during their retirement years. The extent to which the member desires a level of retirement income that exceeds these sources of retirement income will then dictate the amount of additional savings the member must make through individual Registered Retirement Savings Plans, Tax Free Savings Plans and other, non-tax sheltered savings arrangements.

3

Financing Considerations

Key Risk Factors Affecting the Funded Position of the Plan

Activity levels

From time to time, the Plan has had a Funded Ratio on a going concern basis that is less than 100%. Whenever the Plan is in a deficit position, a portion of every dollar of contribution received is allocated towards paying off the deficit. The amortization period for the deficit can extend out as far as 15 years. The elimination of the deficit is dependent on the realization of the assumed hours to be worked over the remainder of the amortization period. Should the actual hours worked in the future fall short of the expectation, the deficit will not be fully eliminated within the amortization period.

The history of the pipefitting industry has been marked with significant peaks and valleys in respect of reported hours as the levels of economic activity increase or decrease. We are unaware of any sources of information which can reliably predict activity levels beyond five years into the future. While not currently foreseen, there is the risk the industry will see a permanent decline in activity levels once the industry has matured. Accordingly, the level of risk assumed by the Plan and the Plan members increases with the duration of the amortization period, especially beyond the five year mark.

The foregoing risk is magnified when you consider that during most periods of declining activity levels, the least experienced members usually see their hours reduced first. Since the least experienced members are typically the younger members, the reduction in hours is usually accompanied by an increase in the average age of the membership and a corresponding increase in the cost of benefits being accrued by members. Given the current Plan and LTD plan designs, such a downturn would also likely lead to higher reported levels of disability since coverage under the LTD plan would drop off and a shortage of work provides disabled members with little incentive to rehabilitate themselves.

Defined contributions

The contributions to the pension plan are defined by the terms, and for the duration, of the collective agreement. The Board has no ability to force either the employers or the Plan members to increase contributions over the duration of the collective agreement, nor can they force the negotiation of higher contributions in future agreements. While there is an implied assumption that the negotiated contribution rate would never decrease, even this aspect is subject to risk.

The foregoing restrictions limit the Board's ability to deal with adverse experience. While it may be reasonable to assume the continuation of contributions beyond the term of the current collective agreement, it is not clear that such contributions would be adequate in the face of severe and extended adverse experience.

Investment performance

The financial health of a pension plan is dependent to a significant extent on the relationship between the actual and expected rates of return.

The *Statement of Investment Policies and Procedures* (the “SIPP”) adopted by the Board includes as objectives:

- Earning a rate of return which equals or exceeds the net actuarial rate of return assumed in the actuarial funding valuation of the Plan plus 1.5%
- Earning a rate of return which exceeds, for each asset class, specific targets for that asset class

Relative to the Plan’s investment performance, the Plan is subject to the following risks:

- Investment returns below the assumed investment return for funding purposes
- Changes in the economic markets which reduce long term rate of return expectations, and consequently, requiring a decrease in the assumed investment return for funding purposes
- Mismatches between assets and liabilities (i.e., solvency risk)
- Volatility in investment returns

Proper governance and management of the Plan

One of the mission objectives for the Board is to ensure good governance of the pension Trust Fund, including the prudent investment of assets and cost effective management.

In the absence of proper governance and management of the Plan, many of the objectives and goals can be derailed or significantly curtailed. By setting forth guidelines for the Board to follow within this policy, along with the board governance and policies handbook, much of the governance risk is being mitigated.

Funding Assumptions and Methods

The following section outlines the general philosophy and guidelines to be applied by the Plan Actuary in the preparation of any actuarial valuation of the Plan.

The guidelines have been set such that their application will further the attainment of the objectives of this Policy on a balanced basis which recognizes the conflicting nature of some of the objectives. To promote benefit security, the actuarial basis must include margins for adverse experience. The level of margins must be set such that they are conservative without being overly conservative. Should the latter occur, transfers of wealth will arise between generations of Plan members. While benefit security represents the first and foremost objective, maximizing retirement income cannot be ignored. The attainment of the “desired” level of margins represents a balancing of the two objectives, since their achievement suggests opposing approaches.

It is the intent of this Policy that the guidelines shall be followed in all situations, with due deference afforded to accepted actuarial practice, as enunciated by the Canadian Institute of Actuaries. For the sake of clarity, should any of the guidelines conflict with accepted actuarial practice, accepted actuarial practice must be followed.

Defined benefit pension plans represent a promise to pay specified benefits to members in the future. To properly fund for the promised benefits, the actuary must calculate the cost of the benefits payable in the future. To properly determine these costs, the actuary must make certain assumptions about what events will transpire in the future. These assumptions include amongst other items, the future rates of return on assets, the number of members who will leave the industry prior to eligibility for retirement, the ages upon which members will elect to retire, and the length of time members will continue to draw a pension up until their deaths.

Prior to the commencement of each valuation, the Plan Actuary shall meet with the Board to review and determine the assumptions for the valuation. In all but exceptional circumstances, the assumptions shall, in aggregate, contain appropriate levels of margin against future adverse experience. The Trustees are responsible for setting the margin against future adverse experience, with input from the Plan Actuary.

Should the Plan encounter a period of significantly adverse experience, the Board may consider the adoption, on a short term basis, of an assumption set which includes less margin against future adverse experience than might otherwise be desired. This approach effectively draws down the previously established levels of margin until they can be replenished. Such approach would only be adopted where the long term viability of the plan can be demonstrated to be secure on a best estimate basis (i.e., on a basis with no margin against adverse experience). Such approach will be fully disclosed by the Plan Actuary in the report on the funded status of the Plan that is filed under the Employment Pension Plans Act.

As an example of a margin against adverse experience, we'll assume an individual has to travel 300 km by car and he knows his vehicle can cover 600 km on a tank of gas. Money is tight so the individual doesn't want to spend more money on gas than he has to. On a no margin basis, he would fill half the tank and leave. On this basis, he has a 50/50 chance of arriving at his destination as planned. Depending on the situation, the downside of running out of gas before arriving could be significant. To allow for unforeseen events such as a strong headwind or a detour, the individual may instead choose to fill the tank 2/3rds of the way. The additional gas provides him with some margin and improves the chance he will arrive at his destination as planned.

The margins built into the set of assumptions provide the same type of buffer against unexpected or unforeseen events that affect the pension plan. The various assumptions and the margins incorporated into these assumptions are described below.

Effective December 31, 2014, the Trustees elected a moratorium from funding solvency special payments which includes prescribed margins to be included in the valuation. Further discussion on the margin is included in the Economic Assumptions below.

Demographic Assumptions

The required demographic assumptions include:

- Rates of retirement by age
- Rates of mortality by age both prior to and after retirement (including any projected mortality improvements in the future)
- Rates of termination by age (i.e., the number of individuals who cease working in the industry prior to their retirements)
- Rates of disability by age where disability benefits will be payable or credited under the pension plan
- Family composition (i.e., percentage of members with spouses eligible for survivor benefits)

The demographic assumptions should individually be set based on long term best estimates for these future events. In aggregate, the assumptions should include appropriate levels of margin where a risk of adverse financial experience exists. In no circumstances shall one assumption or group of assumptions be established such that net experience losses are expected over the long term. Where significant events are expected to occur in the short term, appropriate provision for these events should also be included. The determination of the assumptions shall be based on the collective expertise of the Board and the Plan Actuary.

Economic Assumptions

The required economic assumptions include:

- Investment return
- Future activity levels (i.e., hours worked)

The investment rate of return assumption shall be determined by first establishing a best estimate of the long term total gross rate of return for the fund assets. That best estimate shall reflect the benchmark asset mix of the Fund combined with long-term expected capital market returns, inclusive of a measure of the equity risk premium associated with domestic, North American and foreign equity markets.

The net investment rate of return shall then be established as:

- the best estimate gross rate of return, less
- an appropriate allowance in respect of investment management fees and expenses and any other expenses not explicitly provided for in the current service cost, less
- a margin for adverse experience.

Effective December 31, 2014, the Trustees elected a moratorium from funding solvency special payments which requires that the assumed investment rate of return assumption be set with reference to the benchmark discount rate as described in the Regulations.

The moratorium also prescribes a margin for adverse deviation in the current service cost in the form of a Provision for Adverse Deviation (“PfAD”) which is based on the target equity asset allocation of the assets. While the moratorium does not require a PfAD to be held on the Plan accrued liabilities, it is expected that a PfAD as described in the Regulations will need to be held should the Trustees elect to grant benefit improvements.

The assumption in respect of future hours worked shall be determined by first establishing a best estimate of the future hours for the industry on a year by year basis. Such best estimate shall be based on:

- Recent Plan experience,
- The collective expertise of the Board and their knowledge of the industry, and
- Any other suitable sources such as the Alberta Construction Workforce Supply Demand Forecast.

To introduce some margin into the projected levels of activity, the assumed number of hours worked in the future shall then be adjusted downward on a basis commensurate with the level of uncertainty regarding the assumption. In other words, the further out the projection, the larger the downward adjustment.

Valuation of Assets

For the purpose of the actuarial valuations as at September 30, 2010 and subsequent dates, the Board has adopted the full market value of the assets as the basis for determining the going-concern financial position of the Plan.

Administrative Expenses

An appropriate allowance for administrative expenses shall be provided for as part of the current service cost, with appropriate recognition given to the margin for investment expenses which was built into the assumption about investment returns.

Amortization Periods and Schedules

To recognize the increasing uncertainty of all assumptions as the projection period lengthens, and in particular the difficulty in projecting future hours worked beyond the five year mark, the long term goal is to effect the tests of contribution adequacy by amortizing any unfunded liability at the valuation date over 10 years. The 10 year amortization period has been set recognizing that the applicable pension legislation permits the amortization of unfunded liabilities over longer periods of up to 15 years or the expected average remaining service life, whichever is shorter.

Other Assumptions

Where required for the proper determination of the funded position of the Plan, additional assumptions shall be determined and applied as necessary.

Contingency Reserves

Where appropriate, contingency reserves shall be included in determining the funded position of the Plan. Such contingency reserves shall only be established in respect of expected liabilities for the Plan not otherwise accounted for, and shall not be established as a general means of increasing margins for adverse experience.

For example, where additional costs are expected to be incurred in respect of previously deferred vested members returning to active participation, an appropriate allowance for such costs shall be set aside. Similarly, the trustees may wish to establish a contingency reserve from which to finance increases to pensions in pay.

4

Funded Status and Disclosure

The Plan Actuary shall disclose as part of the actuarial funding report the following information:

- The assumptions and methods used in the calculations
- The Plan liabilities
- The current service cost
- The total funding requirement including the amortization of any unfunded liabilities
- A statement regarding the adequacy of the negotiated contribution rate vis-à-vis the total funding requirement
- Where an unfunded liability exists, the expected period of time until the unfunded liability will be eliminated (assuming no further changes in the contribution rate than those set out in the collective agreement, and no further changes in the benefit structure)

The report shall further disclose the following information:

- A summary of the data upon which the valuation was based
- A description of the benefits valued
- The Plan assets on a market value and a smoothed basis, if applicable
- Any other disclosure requirements included in the CIA Standards of Practice for Valuation of Pension Plans or the CIA Report of the Task Force on Multi-Employer Pension Plans

It is anticipated that these disclosures will be provided on an annual basis.

5

Application of Surplus Benefits Policy

When the Plan was first established in 1968, a base level of pension was provided to retirees regardless of the number of years of contributions which were remitted to the fund on their behalf. The decision to provide these benefits reflected the effort and commitment that these members had made to the development and growth of the Local and the industry during their working careers when no pension plan existed. In the years that ensued, as the funding of the pension plan increased, these base benefits were increased to levels which would enable these members to maintain a reasonable standard of living in their retirement years.

It is the view of the Board that there is no longer a need to allocate contributions of the active members towards benefit improvements in respect of any non-working group of members, except in specific acknowledged situations. For example, the trustees may decide to implement an increase to pensions in pay that may include some subsidization from the contributions of active plan members.

The primary objective of the Board at any time is to maintain a fully funded position. Any special payments required to amortize an unfunded liability or solvency deficiency inherently involves an intergenerational transfer of wealth from active plan members to retired plan members.

After this objective is largely achieved, a smaller proportion of the Standard Contribution Rate will be directed towards the unfunded liability and a greater proportion will be available for member benefits. The Board recognizes that to balance the competing forces of benefit security and inter-generational equity, flexibility will be needed as to the timing and extent of any future benefit enhancements.

In this regard and subject to the requirements of the EPPA:

- the Board will make no benefit enhancements that would cause the Plan to have either a going-concern Funded Ratio or a Solvency Ratio less than 90%;
- the Board will manage benefit enhancements in such a way that the margin between the Standard Contribution Rates and the funding costs of the Plan (current service costs plus special payments) to fall within a range of 20% to 25% of the Standard Contribution Rates. In unusual circumstances, the Board may permit the margin to fall below 20% or remain above 25%; and
- the Board shall periodically, but not less frequently than every third year, examine the impact of possible benefit enhancements within these financing parameters.

When funds are available to enhance benefits to Plan Members, priority will be given to the following enhancements subject to any benefit limitations imposed pursuant to the Income Tax Act.

1. Where a funding surplus exists, the Board will endeavor to increase pensions in pay for union members and their spouses as well as disability pensions accrued to date.
2. Where there is sufficient margin between the Standard Contribution Rates and the funding costs of the Plan as stated above, the Board will endeavor to increase the future benefit accrual rate being earned by active plan members.

One of the primary purposes of the development of this Policy is to minimize the possibility of ever being required to reduce benefits due to funding requirements which cannot be met. It is the intent of the Board that benefit reductions shall only be effected where:

- They are required for reasons of compliance with any applicable legislation, or
- The negotiated contribution rate is revealed to be inadequate to meet the minimum funding requirements of the Plan.

Where the benefit reductions are required due to the Plan's funded status, the funding basis used for the calculations shall include appropriate margins for adverse experience but not necessarily the full amount of desired margins. The underlying philosophy in this approach is to not overreact while at the same time reducing the possibility of requiring a second round of benefit reductions should future experience be less favourable than best estimate assumptions.

The exact nature of the benefit reductions shall be determined by the Board based on various options to be provided by the Plan Actuary, subject to the approval of the Superintendent of Pensions in accordance with the Employment Pension Plans Act.

APPENDIX A

Statistics Regarding Pension Plan Risk

1. Growth in Accrued Liabilities

Accrued Liabilities

As at September 30	Active Members ¹⁰ (\$000) (A)	Inactive Members ¹¹ (\$000) (B)	Total Members (\$000) (C)	Percentage of Inactive Liabilities (B/C)
2001	\$204,926	\$126,255	\$331,181	38%
2002	\$230,252	\$135,832	\$366,084	37%
2003	\$253,527	\$155,993	\$409,520	38%
2004	\$268,923	\$176,427	\$445,350	40%
2005	\$289,298	\$194,025	\$483,323	40%
2006	\$308,505	\$214,045	\$522,550	41%
2007	\$327,583	\$236,959	\$564,542	42%
2008	\$360,839	\$267,096	\$627,935	43%
2009	\$401,181	\$302,953	\$704,134	43%
2010	\$455,751	\$359,938	\$815,689	44%
As at December 31				
2011	\$546,442	\$415,150	\$961,592	43%
2012	\$588,242	\$443,540	\$1,031,782	43%
2013	\$626,068	\$490,762	\$1,116,830	44%
2014 ¹²	\$622,632	\$525,801	\$1,148,433	46%
2015	\$659,665	\$580,672	\$1,240,337	47%
2016	\$609,868	\$717,286	\$1,327,154	54%
2017	\$657,859	\$797,171	\$1,455,030	55%
2018	\$623,435	\$809,530	\$1,432,965	56%

¹⁰ Includes actives, disableds and DC Contribution balances

¹¹ Inactives include pensioners, survivors and deferreds

NOTE: DC balances are included but are not material to results. At December 31, 2018 the DC balance was \$26.1 million.

¹² Calculated using the benchmark discount rate as described in the Act for valuations on or after December 31, 2014, prior to the application of a prescribed Provision for Adverse Deviations.

2. Contributions and Benefit Payments

For Years Ending September 30

Year	Hours Worked ¹³ (million)	Net Employer Contributions ¹⁴ (\$ million)	Benefit Payments (\$ million)	Ratio (%)
2001	9.3	\$36.2	\$12.5	34.5%
2002	10.2	\$45.5	\$13.2	29.0%
2003	8.1	\$38.3	\$14.1	36.8%
2004	8.0	\$38.9	\$15.6	40.1%
2005	9.6	\$49.5	\$19.3	39.0%
2006	10.5	\$59.4	\$20.5	34.5%
2007	11.0	\$62.0	\$23.9	38.5%
2008	13.9	\$89.8	\$25.2	28.1%
2009	11.4	\$75.9	\$29.4	38.7%
2010	12.9	\$89.1	\$31.9	35.8%

For Periods Ending December 31

Year	Hours Worked ¹⁵ (million)	Net Employer Contributions ¹⁶ (\$ million)	Benefit Payments (\$ million)	Ratio (%)
2011 ¹⁷	13.6	\$98.2	\$46.5	47.4%
2012	12.0	\$85.8	\$42.3	49.3%
2013	12.3	\$86.9	\$47.2	54.3%
2014	11.4	\$82.2	\$53.0	64.5%
2015	11.1	\$80.2	\$61.4	76.6%
2016	11.0	\$79.5	\$72.6	91.3%
2017	9.8	\$70.3	\$74.2	105.5%
2018	6.5	\$45.8	\$73.1	159.6%

¹³ Hours actually worked ("net" hours)

¹⁴ Employer contributions actually remitted ("net" contributions)

¹⁵ Hours actually worked ("net" hours)

¹⁶ Employer contributions actually remitted ("net" contributions)

¹⁷ Reflects 15 months of experience

APPENDIX B

Actuarial Assumptions

Used for the valuation as at December 31, 2017	Used for the valuation as at December 31, 2018	Comments or Issues																				
Rates of Retirement																						
<ul style="list-style-type: none"> Age 58 if eligible for Special Early Retirement¹⁸ Age 60 for all active members who have at least 15 years of service at retirement and deferred members who remain Union members Age 65 otherwise 	Same.	<ul style="list-style-type: none"> Recent experience has been similar to the assumptions. 																				
Rates of Termination¹⁹																						
<ul style="list-style-type: none"> 20.0% in first year of plan membership 15.0% in second year of plan membership Age related table thereafter (as shown below) <table border="1"> <thead> <tr> <th colspan="2"><i>Annual Rates</i></th> </tr> <tr> <th>Age</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>20</td> <td>10.0%</td> </tr> <tr> <td>25</td> <td>10.0%</td> </tr> <tr> <td>30</td> <td>5.6%</td> </tr> <tr> <td>35</td> <td>3.2%</td> </tr> <tr> <td>40</td> <td>2.2%</td> </tr> <tr> <td>45</td> <td>1.7%</td> </tr> <tr> <td>50</td> <td>1.2%</td> </tr> <tr> <td>55</td> <td>0.7%</td> </tr> </tbody> </table>	<i>Annual Rates</i>		Age	Percentage	20	10.0%	25	10.0%	30	5.6%	35	3.2%	40	2.2%	45	1.7%	50	1.2%	55	0.7%	Same.	<ul style="list-style-type: none"> Need to monitor experience based on assumption. To include some margin of conservatism, rates should be less than expected rates of termination in the absence of a downturn in the industry.
<i>Annual Rates</i>																						
Age	Percentage																					
20	10.0%																					
25	10.0%																					
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40	2.2%																					
45	1.7%																					
50	1.2%																					
55	0.7%																					

¹⁸ A member's Special Early Retirement Date is the date the member has attained at least age 58 and where his age and service, when added together, equal 80 or more. To be eligible for the unreduced pension payable on the member's Special Early Retirement Date, the member must have at least 5 years of continuous membership in the Union at the time of the member's retirement.

¹⁹ A member is assumed to terminate participation in the pension plan when he fails to work at least 350 hours in two consecutive plan years.

Rates of Mortality																																						
<ul style="list-style-type: none"> 120% of the rates of the 2014 Private Sector Canadian Pensioners Mortality (CPM) table Generational improvements using CPM improvements scale B 	Same.	<ul style="list-style-type: none"> The Canadian institute of Actuaries released new mortality tables in 2014. The assumption reflects an experience study conducted for the Plan and other data in the CPM study. 																																				
Rates of Disability																																						
<p>Disability rates used are two-thirds of the disability incidence rates summarized below:</p> <p><u>Disability Incidence Rates per Age for Male</u></p> <table> <tr><td>20</td><td>0.0459%</td></tr> <tr><td>25</td><td>0.0459%</td></tr> <tr><td>30</td><td>0.0555%</td></tr> <tr><td>35</td><td>0.0882%</td></tr> <tr><td>40</td><td>0.1517%</td></tr> <tr><td>45</td><td>0.2513%</td></tr> <tr><td>50</td><td>0.4746%</td></tr> <tr><td>55</td><td>1.0029%</td></tr> <tr><td>60</td><td>2.2138%</td></tr> </table> <p><u>Disability Incidence Rates per Age for Female</u></p> <table> <tr><td>20</td><td>0.0257%</td></tr> <tr><td>25</td><td>0.0257%</td></tr> <tr><td>30</td><td>0.0350%</td></tr> <tr><td>35</td><td>0.0564%</td></tr> <tr><td>40</td><td>0.1145%</td></tr> <tr><td>45</td><td>0.1986%</td></tr> <tr><td>50</td><td>0.3781%</td></tr> <tr><td>55</td><td>0.7342%</td></tr> <tr><td>60</td><td>1.6544%</td></tr> </table>	20	0.0459%	25	0.0459%	30	0.0555%	35	0.0882%	40	0.1517%	45	0.2513%	50	0.4746%	55	1.0029%	60	2.2138%	20	0.0257%	25	0.0257%	30	0.0350%	35	0.0564%	40	0.1145%	45	0.1986%	50	0.3781%	55	0.7342%	60	1.6544%	Same.	<ul style="list-style-type: none"> Effective January 1, 2002, the H&W Board introduced an insured LTD benefit Annual experience has been very volatile
20	0.0459%																																					
25	0.0459%																																					
30	0.0555%																																					
35	0.0882%																																					
40	0.1517%																																					
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50	0.3781%																																					
55	0.7342%																																					
60	1.6544%																																					
Family Composition																																						
<ul style="list-style-type: none"> 80% married at retirement Male spouses 3 years older than female spouses 	Same.																																					

Expenses		
<ul style="list-style-type: none"> Administrative: \$1,260,000 Investment: N/A²⁰ 	<ul style="list-style-type: none"> Administrative: \$1,400,000 Investment: N/A²⁰ 	<ul style="list-style-type: none"> Need to review experience from year to year.
Reinstatement and Consolidation		
<ul style="list-style-type: none"> None 	Same.	<ul style="list-style-type: none"> Need to review experience from year to year.
Hours Worked		
7 million hours per year	5 million hours per year	<ul style="list-style-type: none"> Review estimate based on current plan year and future expectations At what point is industry expected to mature?
Investment Return²¹		
<ul style="list-style-type: none"> (A) Target equity allocation: 46.0% (B) CANSIM Series V122544: 2.20% (C) AA Corporate Long Bond Yield: 3.52% <p>Benchmark discount rate = $[A \times (4.0\% + B)] + [(1 - A) \times C] + 0.40\%$</p> <ul style="list-style-type: none"> = 5.15% 	<ul style="list-style-type: none"> (A) Target equity allocation: 46.0% (B) CANSIM Series V122544: 2.15% (C) AA Corporate Long Bond Yield: 4.06% <p>Benchmark discount rate = $[A \times (4.0\% + B)] + [(1 - A) \times C] + 0.40\%$</p> <ul style="list-style-type: none"> = 5.42% 	<ul style="list-style-type: none"> Review election of solvency moratorium Incorporate Trustee decisions regarding benchmark asset mix (SIPP) and portion of fund invested in long bonds versus universe bonds

²⁰ Under the solvency moratorium, investment expenses are no longer required to be reflected in the Benchmark Discount Rate or PfAD.

²¹ As per the moratorium on solvency special payments, the investment return as at December 31, 2014 is calculated using the benchmark discount rate as described in the Employment Pension Plans Act.

APPENDIX C

Glossary of Terms

1. “**Actuary or Plan Actuary**” shall mean a person or firm retained by the Board who is, or one of whose employees is, a Fellow of the Canadian Institute of Actuaries.
2. “**Beneficiary**” shall mean a person who is receiving or entitled to receive benefits under this Plan (other than a pension for his retirement) because of his designation for such benefits by a Plan Member or Retired Plan Member.
3. “**Board**” shall mean the Board of Trustees of the Edmonton Pipe Industry Pension Trust Fund, whose duties shall be that of the administration of the Plan and the Trust Account, and whose members shall be appointed pursuant to the applicable provisions of the Trust Agreement.
4. “**Collective Agreement**” shall mean the Registered Collective Agreement between Construction Labour Relations - An Alberta Association Mechanical (Provincial) Trade Division and the United Association of Journeymen and Apprentices of the Plumbing and Pipefitting Industry of the United States and Canada, AFL-CIO, CFL, Local Union #488, Edmonton, Alberta, and Local Union #496 Calgary, Alberta, as amended or replaced from time to time.
5. “**Commutated Value**” shall mean, in relation to benefits that a person has a present or future entitlement to receive, a lump sum amount which is the actuarial present value of those benefits computed using rates of interest, the actuarial tables and other assumptions that are adopted by the Board on the recommendation of the Actuary for purposes of the Plan, subject to any requirements of the Employment Pension Plans Act and the Income Tax Act.
6. “**Contribution Rate**” for any period shall mean the amount remitted to the Trust by Employers on behalf of journeymen members of the Union for each hour of covered employment under the industrial terms of the Collective Agreement applicable for the period.
7. “**Effective Date of the Plan**” shall mean October 1, 1968.
8. “**Employee**” shall mean any person on whose account an Employer is, at the time of reference, making contributions to the Plan, or for whom an Employer previously did make such contributions and who is, at the time of reference, eligible for benefits to be provided by the Plan in accordance with the Trust Agreement.
9. “**Employer or Participating Employer**” shall mean a person or organization, whether incorporated or not, who is or becomes bound by a collective bargaining or other agreement with the Union, which agreement provides for the Employer to make contributions to the Plan on behalf of Employees. “Employer” shall also include the Union, the Edmonton Pipe Industry Pension Trust Fund, the Edmonton Pipe Industry Health & Welfare Trust Fund, the Edmonton Pipe Trades Education Trust Fund, and any other employer designated by the Board.

10. “**Employment Pension Plans Act**” shall mean the Employment Pension Plans Act, Statutes of Alberta, 2012, chapter E-8.1, and the Regulations there under, as amended or replaced from time to time.
11. “**Funding Agreement**” shall mean any agreement now or hereafter entered into between the Board and the Trust Company for the purposes of the Plan.
12. “**Funded Ratio**” shall mean the ratio of the actuarial value of the assets to the total accrued liabilities as determined under the results of a going concern actuarial valuation.
13. “**Income Tax Act**” shall mean the Income Tax Act, Revised Statutes of Canada, 1985, chapter 1, Fifth Supplement, and the Regulations there under, as amended or replaced from time to time.
14. “**Plan**” shall mean The Edmonton Pipe Industry Pension Plan, created for Employees of those Employers who are subject to a Collective Agreement as well as those Employees who qualify under the eligibility clause.
15. “**Plan Member**” shall include:
 - (a) any Employee who is eligible for coverage and benefits under the Trust Agreement;
 - (b) any Employee who is entitled to benefits from the Plan pursuant to a Reciprocal Agreement;
 - (c) after May 31, 1981 and before January 1, 1985, any Employee who is not a member of the Union but who is employed continuously (i.e., without interruption for any reason whatsoever, but subject to any exception made by the Board in its discretion) within the scope of the Collective Agreement as either a permit worker or a potential member of the Union until he becomes a member of the Union (which must occur before his retirement) and whose application to the Board (for coverage under the Plan in respect of hours worked before initiation into the Union) is approved;
 - (d) after December 31, 1984 and before January 1, 2000, any Employee who is not a member of the Union but who is employed within the scope of the Collective Agreement as either a permit worker or a potential member of the Union until he becomes a member of the Union (which must occur before his retirement) and whose application to the Board (for coverage under the Plan in respect of hours worked before initiation into the Union) is approved;
 - (e) after December 31, 1999, any Employee who is not a member of the Union but who is employed within the scope of the Collective Agreement as either a permit worker or a potential member of the Union;
 - (f) any other Employee who is not a member of the Union but who belongs to an eligible class of Employees as designated by the Board and on whose behalf an Employer has made contributions to the Plan; and
 - (g) any other person who is eligible for coverage and benefits pursuant to any applicable federal or provincial pension legislation.

16. "**Plan Year**" effective January 1, 2012 shall mean the twelve month period from January 1 to the succeeding December 31.
17. "**Retired Plan Member**" shall mean a former Plan Member or a Plan Member who is receiving pension benefits under this Plan.
18. "**Retirement Benefit**" shall mean any payment provided for in accordance with the Plan.
19. "**Solvency Ratio**" shall mean the ratio of the market value of the assets (net of any termination expenses) to the total solvency liabilities as determined under the results of a solvency actuarial valuation.
20. "**Specified Multi-Employer Plan or SMEP**" shall mean a pension plan administered for Employees of two or more Participating Employers for which a board of trustees is the administrator, the plan is maintained pursuant to contributions required under a collective agreement and the number of trustees representing Employees must not be less than the number representing the Participating Employers.
21. "**Trust or Trust Fund**" shall mean the trust established by the Trust Agreement.
22. "**Trust Account**" shall mean the fund maintained to provide benefits under or related to the Plan.
23. "**Trust Agreement**" shall mean the Agreement and Declaration of Trust made and entered into as of the first day of October, A.D. 1968, by and between the Union and those Employers bound by the terms of a predecessor (dated May 1, 1965) of the Collective Agreement, as amended or replaced from time to time.
24. "**Trust Company**" shall mean any trust corporation or financial institution appointed by the Board to hold, administer and invest the Trust Account pursuant to the Funding Agreement.
25. "**Union**" shall mean Local Union 488 of the United Association of Journeymen and Apprentices of the Plumbing and Pipefitting Industry of the United States and Canada.



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