OPTrust Select and Impact on Overall OPSEU Plan Sustainability

March 19, 2018

Objectives of the OPTrust Funding Policy

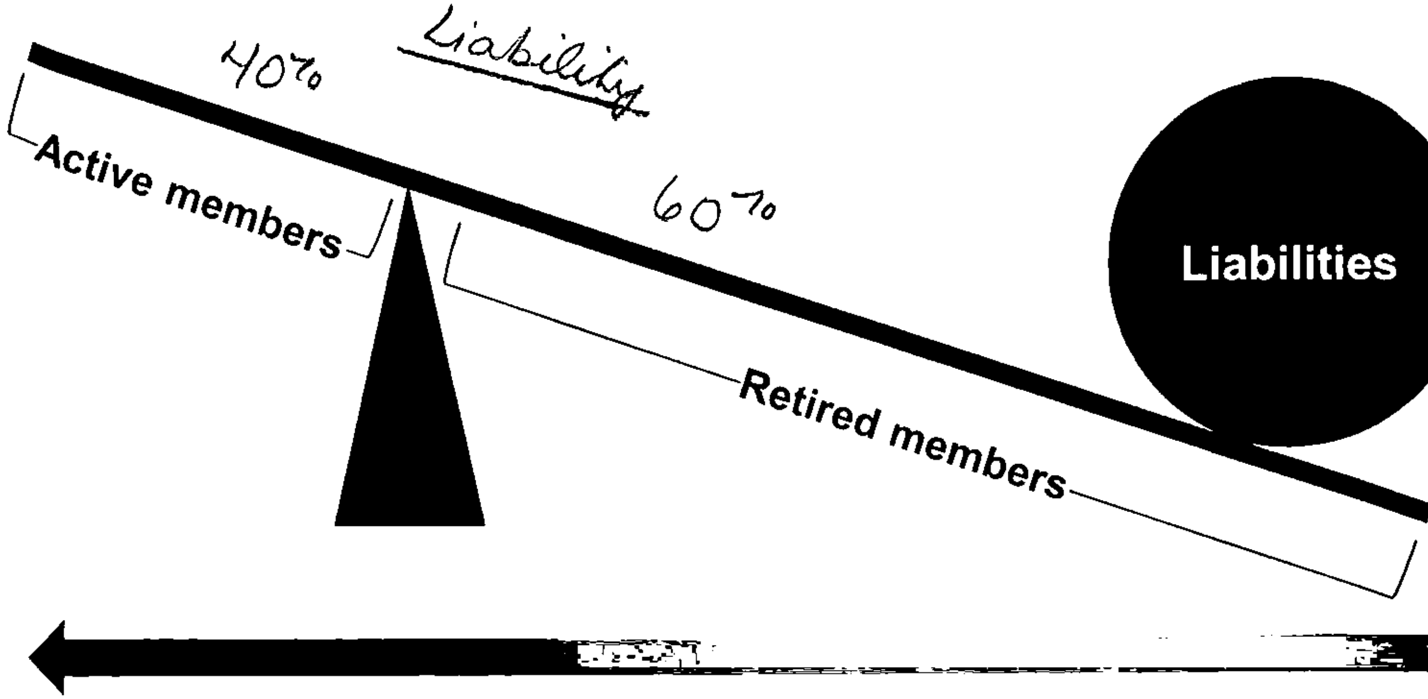
- Security of promised benefits
- Stability of contributions
- Inter-generational equity through plan sustainability

**"Paying pensions today,
preserving pensions for tomorrow."**

OPSEU Pension Plan is a Defined Benefit Pension Plan

- Jointly Sponsored Pension Plan (JSPP)
  - Plan is jointly governed
  - Plan is jointly funded
  - Employer/employees share investment risk (not pensioners)
- Many risks are pooled
  - Longevity risk
  - Retirement risk
- Employer/employee contributions meant to vary over time

Ability to Take Risk is Shrinking



The shrinking pool of active members who can bear the cost means more force is needed to be lifted out of deficit

Emerging Issue: Plan Maturity

- Deficit funding is the responsibility of **active contributing members** and their employers
- **Inactive members** do not share in the deficit burden
- Members' share of a 10% loss almost doubled over the period

	2004	2016
Asset Value ($ Million)	$ 10,500	$ 19,045
Number of Active Members	44,243	43,575
10% loss ($ Millions)	$ 1,050	$ 1,905
Each Member's Share of the Loss	$ 23,733	$43,706

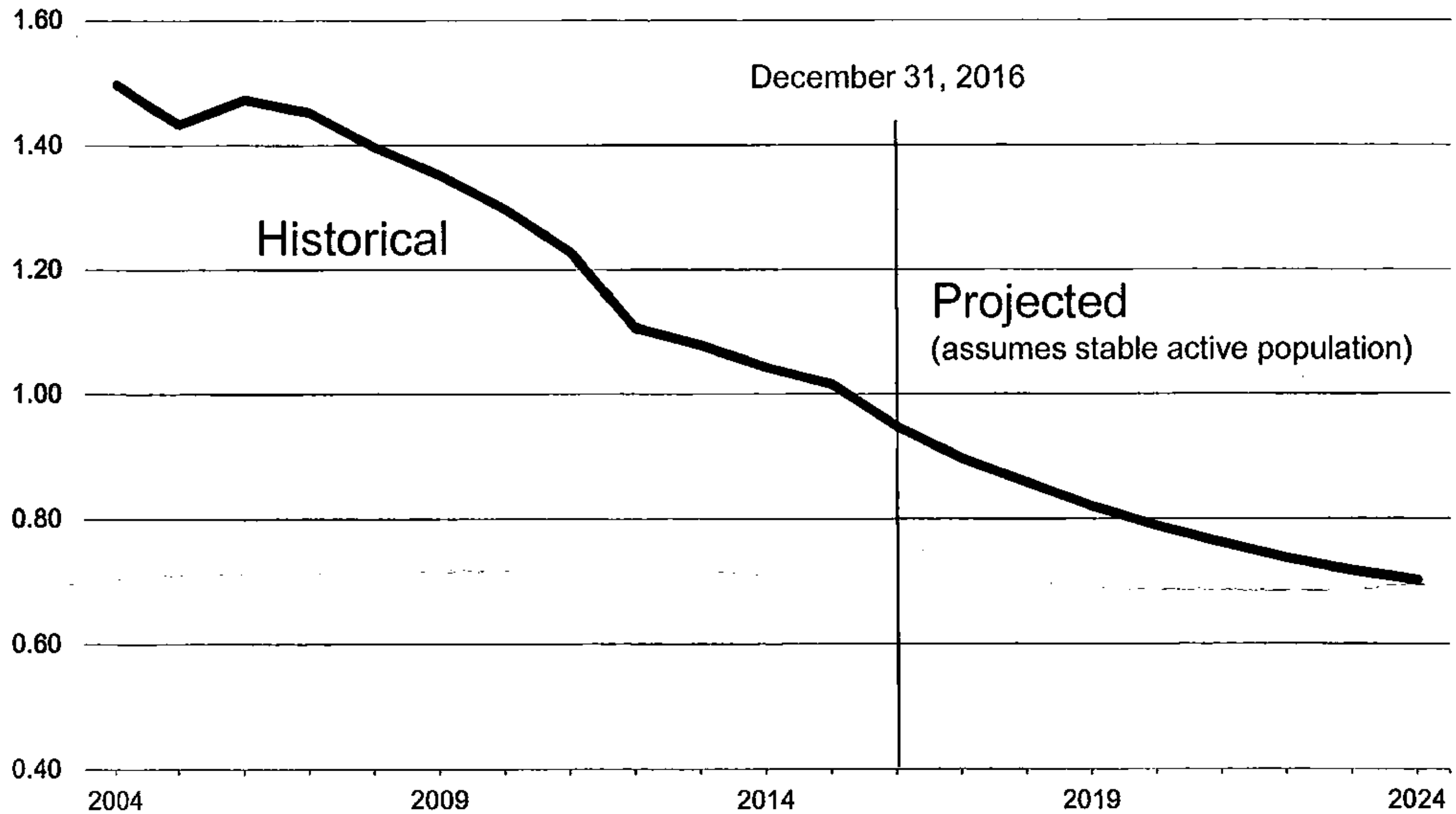
liabilities matched @ 100%

→ inactive/retirees liability has increased.

→ 60% of benefits relates to retirees

Plan Maturity – how mature are we?

Active/Inactive Ratio at December 31

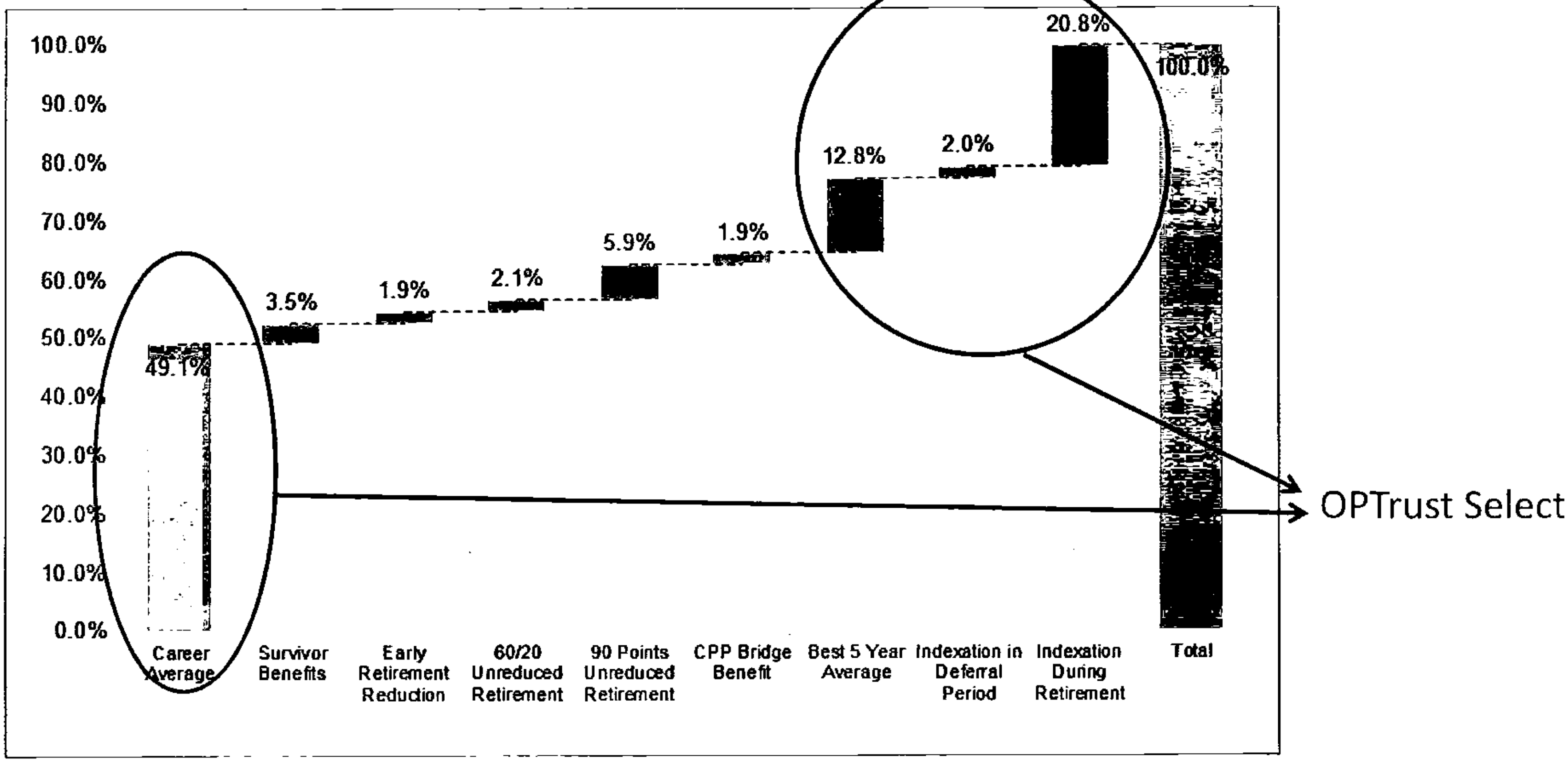


.7 to 1.0 active to inactive (based on current levels of OPSEU employment).

OPTrust Select vs. Main Schedule of Benefits

	OPTrust Select	Main Schedule
Employee Contribution Rate	3% of earnings	9.4% of earnings up to YMPE plus 11% in excess
Employer Contribution Rate	Matched employee	Matched employee
Lifetime Benefit	0.6% career average earnings with conditional earnings upgrades times service	2% of best average earnings less 0.655% of five year average YMPE times service
Bridge Benefit (to age 65)	None	0.655% of five year average YMPE times service
Subsidized Early Retirement Benefit	None	60 with 20 years of service, or age plus service equals 90 points
Normal Form of Pension	Life only Minimum guarantee of contribution refund	Single Members – Life only Married members – 60% joint and survivor Minimum guarantee of contribution refund
Inflation Protection	100% conditional indexing, dependent on the funded status of the Plan	100% mandatory indexation

Breakdown of Value of Plan Benefits for Main Schedule



As a defined benefit plan, the Sponsors (active contributing members and the employers) own the risks associated with meeting benefit obligations

An Actuarial Valuation…

- Snapshot picture
  - financial condition of the pension plan at the valuation date
- Measures
  - funded status
  - compares assets to liabilities
  - contribution adequacy
  - evaluates sufficiency of current overall contribution rates
- Considers
  - all material future contingencies
  - actuarial profession's standards
  - plan's funding policy
  - legislative and regulatory requirements

An Actuarial Forecast

- Projects the potential for future events
  - Membership data year over year
  - Liability changes as the data changes
  - Economic experience including asset returns
- Uses many assumptions
  - Changing assumptions would likely result in different outcomes
  - Comparing different potential events allows us to narrow in on significant risks

Forecast 1 – Events Occur as Expected without Volatility

	Assumption
Return on assets	5.6% per annum
Assets	Evolve market value and smoothed value from Dec. 31/16 valuation
Going Concern assumptions	No change from Dec. 31/16 valuation
Present value of future benefits	Increased by 1% to approximate impact of new mortality improvement scale (MI-2017) adopted by Board for Dec. 31/17 valuation
Valuation filing frequency	Annual
Rate Stabilization Reserve	Excluded from liabilities (for simplicity, no additional surplus allocated)
Deficit Allocation	main schedule share of deficit based on proportion of net actuarial liability (NAL) of main schedule active members relative to NAL of total plan active members
Required Contribution rate increase	Determined at each valuation; deficit share divided by present value of future salaries

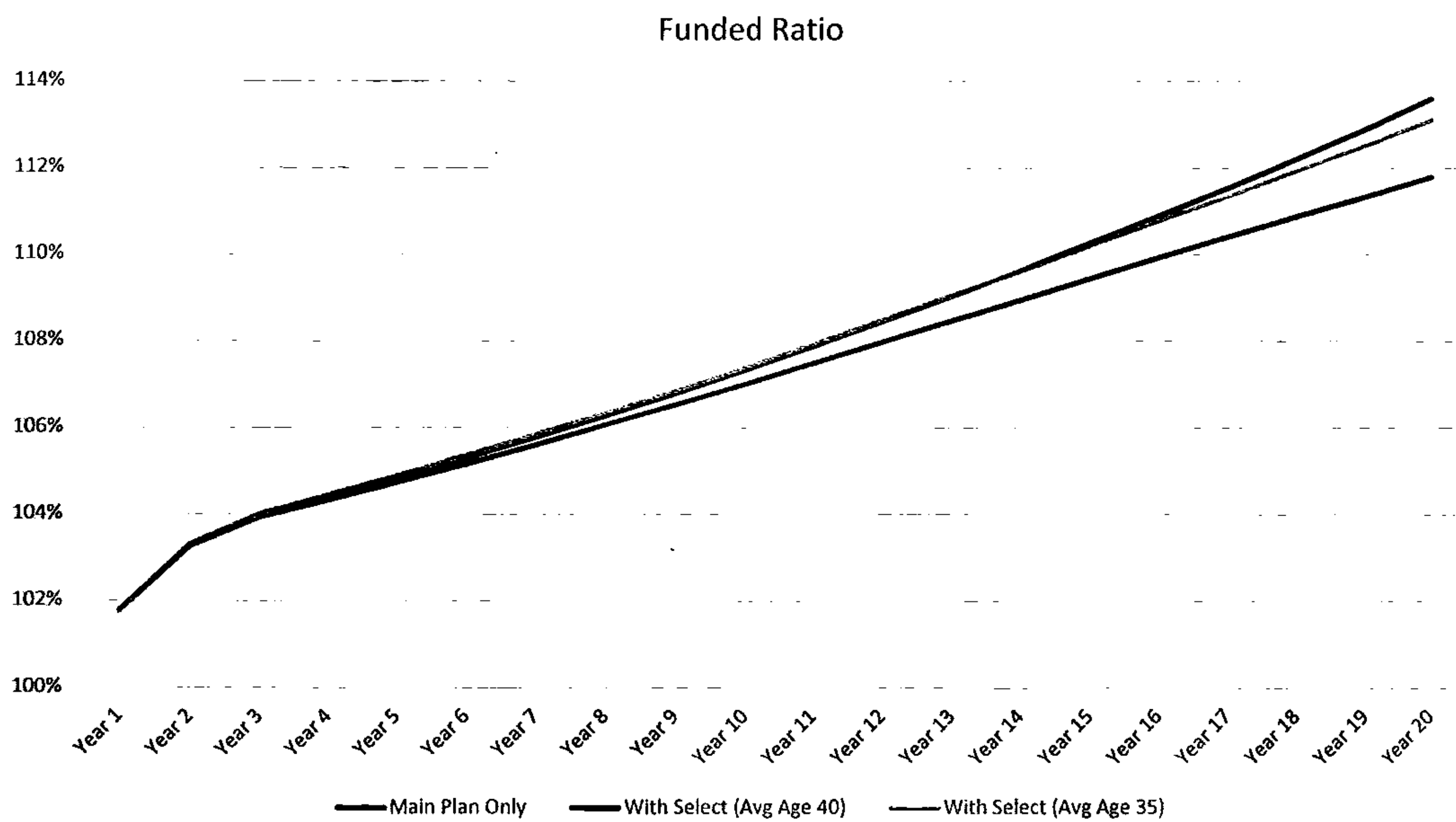
per funding policy

Forecast 1 – Events Occur as Expected without Volatility

	Main Schedule Specific Assumptions
Demographic data and actuarial liabilities	Projected from Dec. 31/16 valuation
Annual increase in members	No Increase – active members are replaced
New entrant profiles	Based on actual new entrants (2012 to 2016)
Average age of new entrants	35

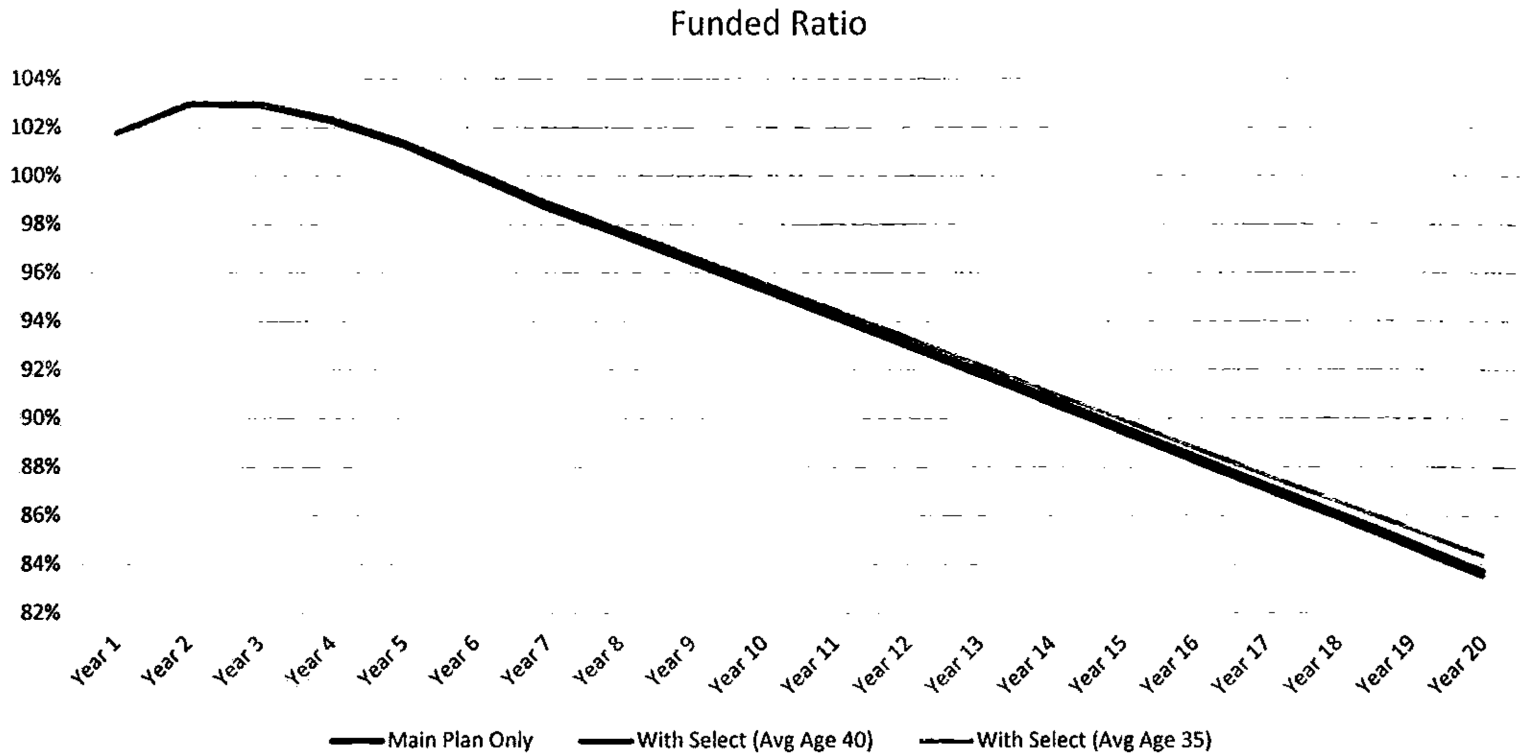
	Select Specific Assumptions
Intended Benefit	Ad hoc wage upgrades and post-retirement indexation at 2.0% per annum
Starting number of members	0
Annual increase in Select members	1000 in 2018, 2000 thereafter
New entrant profiles	Same as main schedule except assume 75% females
Average age of new entrants	35 & 40

Forecast 1 - Events Occur as Expected without Volatility

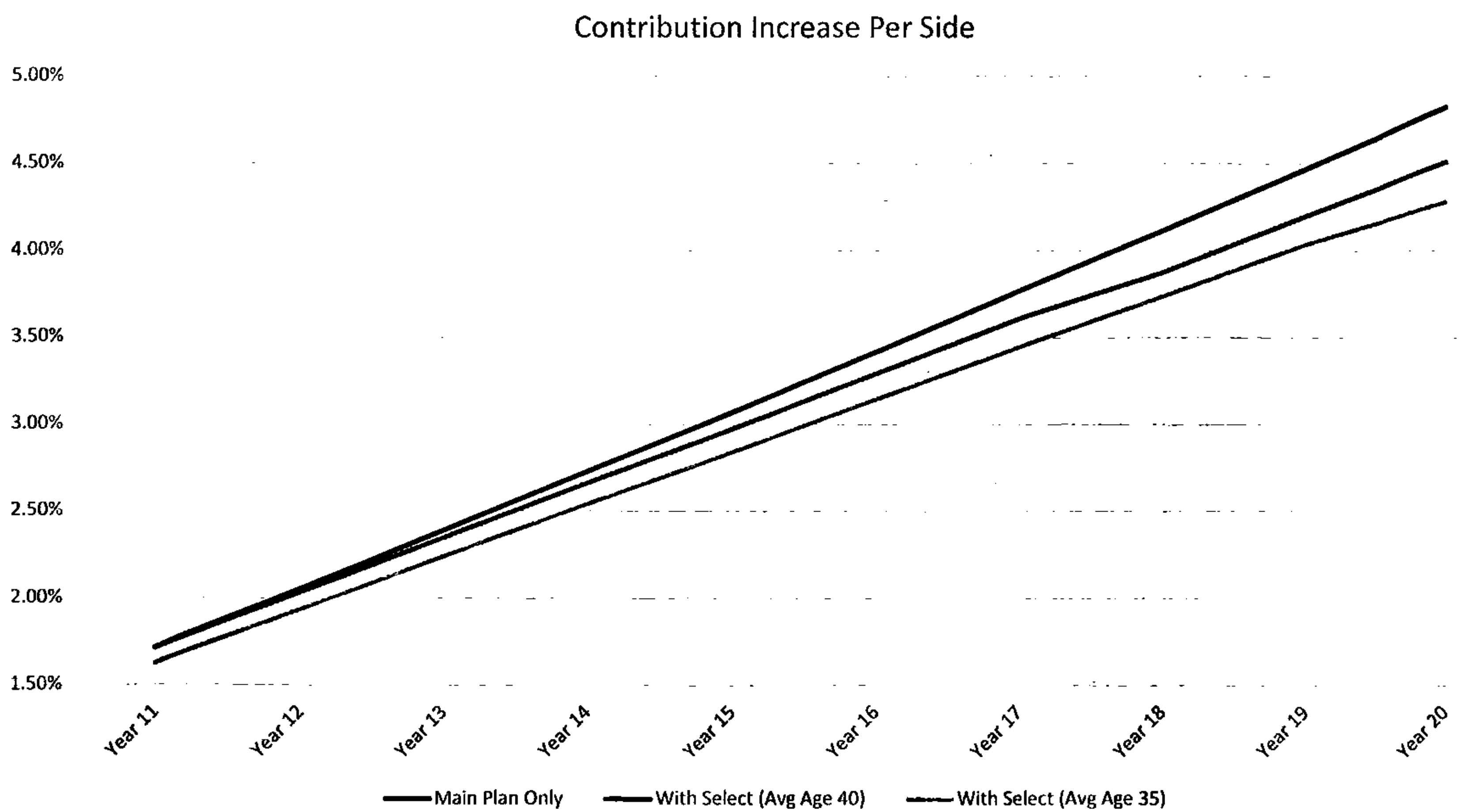


Forecast 2 – Low for Long Investment Returns

	Assumption Variation
Return on assets	4% per annum

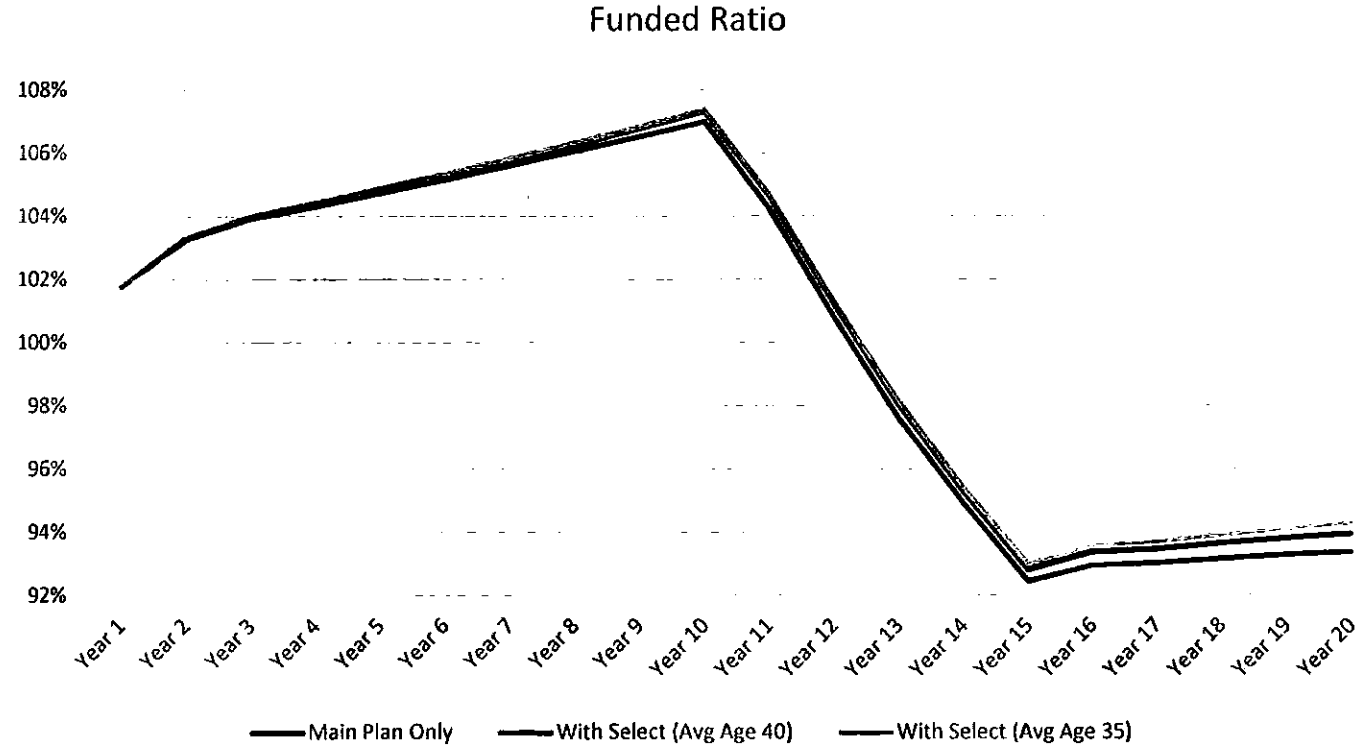


Forecast 2 – Low for Long Investment Returns

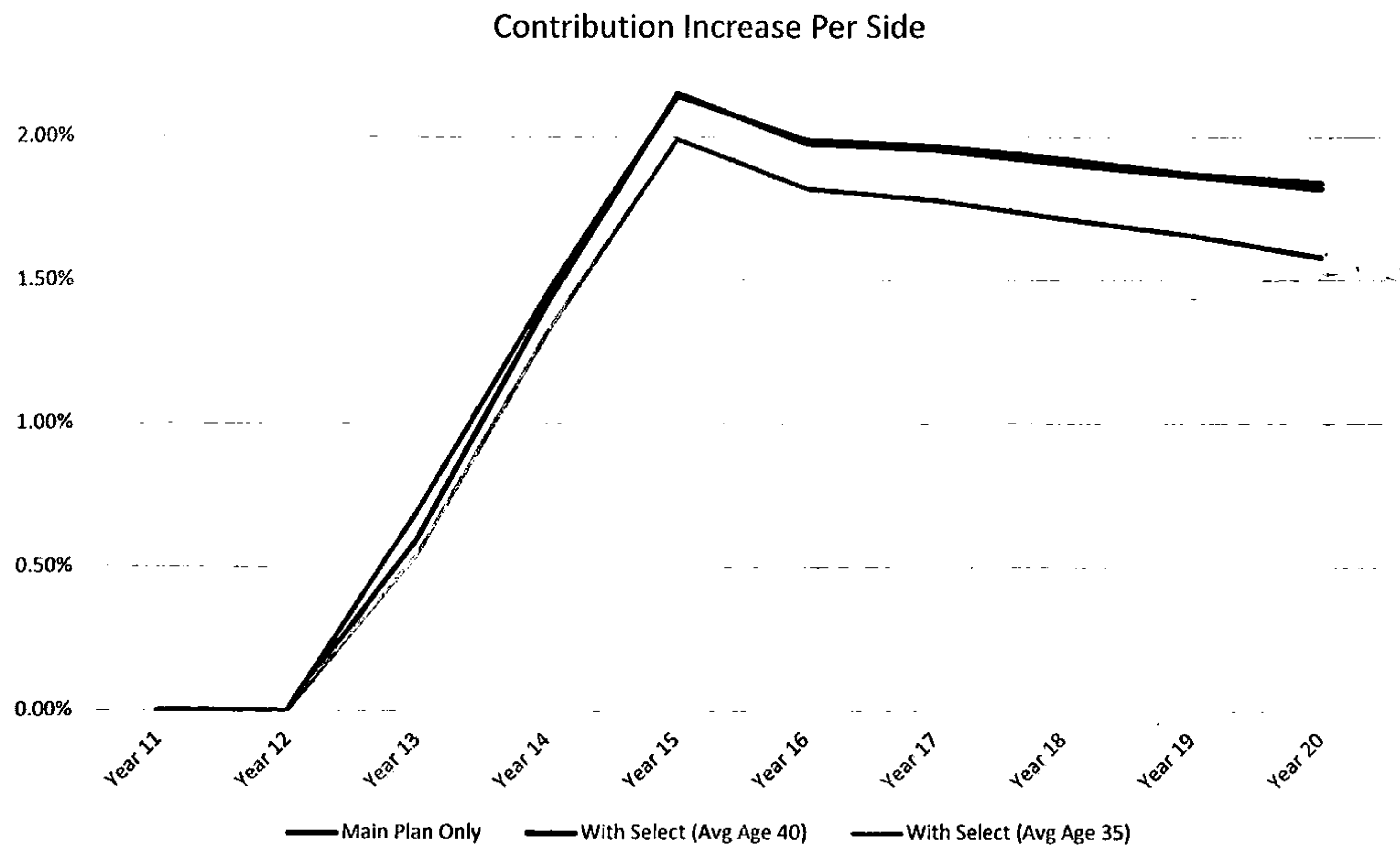


Forecast 3 – Market Shock in Year 10

	Assumption
Return on assets	5.6% p.a. return in years 1 through 9 followed by negative 10% return in year 10 then 5.6% thereafter



Forecast 3 – Market Shock in Year 10



Going Concern Actuarial Basis

Economic Assumptions

Price inflation (CPI)	2.00% per annum
Valuation discount rate (net of assumed investment expenses)	5.40% per annum
Allowance for non-investment expenses	A provision of $20 million per year, over the next 30 years, was included in respect of future administrative costs
Average national wage and Income Tax Act maximum benefit limit increases	2.50% per annum
Average members' earnings increases	2.75% per annum plus promotional scale (Table 1)
Interest on members' required contributions	3.00% per annum

Table 1

Years of service	Promotional scale
1	4.00%
2	3.60%
3	3.20%
4	2.60%
5	2.10%
6	1.80%
7	1.60%
8	1.40%
9	1.20%
10	1.00%
11	0.80%
12	0.60%
13	0.60%
14	0.50%
15	0.50%
16	0.50%
17	0.50%
18	0.30%
19	0.30%
20	0.30%
21 and over	0.00%

Going Concern Actuarial Basis

Demographic Assumptions

Mortality	108% of 2014 Canadian Pensioner's Mortality Private Sector Table (CPM2014Priv), with generational projection using CPM scale B
Retirement	
▪ regular early retirement	Age-related rates (Table 2)
▪ 90-Point retirement	40% prior to age 60
▪ 60/20	30% at age 60 with 20 years of service and 20% thereafter
▪ deferred vested	Age 59 (immediately if older)
Disability	No provision (membership continues)

Table 2
(All rates per 1,000 members)

Attained Age	Regular early	90-point	60/20
55	46	400	0
56	20	400	0
57	23	400	0
58	26	400	0
59	29	400	0
60	58	0	300
61	59	0	200
62	61	0	200
63	62	0	200
64	115	0	200
65 and over	1,000	1,000	1,000

Going Concern Actuarial Basis

Termination	
■ rates	Service-related rates (Table 3)
■ benefits	30% elect deferred annuity 70% elect commuted value (determined based on a discount rate of 2.00% and CPM2014 generational projection using CPM Scale B)
■ involuntary terminations	10% involuntary and eligible for grow-in benefits
Marital status	
■ female members	60% have spouse
■ male members	85% have spouse
Member / spouse age difference	
■ female members	Spouse 2 years older
■ male members	Spouse 3 years younger

Table 3

Age	Termination Rates (per 1,000 members)
20	77
25	63
30	51
35	41
40	33
45	27
50	22
55 and over	0

Actuarial Methods

Asset valuation method	Market-related value
Actuarial cost method	Modified Aggregate