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November 28, 2016

RESS & OVERNIGHT COURIER

Ms. Kirsten Walli
Board Secretary
Ontario Energy Board
P.O. Box 2319
2300 Yonge Street, 27th Floor
Toronto, ON M4P 1E4

Dear Ms. Walli:

Re: Application by Ontario Power Generation Inc. for 2017-2021 Payment Amounts (EB-2016-0152) – OPG's Reply Submission on Confidential Filings (Interrogatory Responses)

Further to Procedural Order No. 4, these are OPG's reply submissions to submissions from the Ontario Energy Board staff (OEB staff) and School Energy Coalition (SEC), in relation to confidentiality requests made by OPG respecting certain interrogatory responses.

In letters dated October 27, 2016 and November 1, 2016, OPG sought confidential treatment within 18 interrogatory responses and 55 documents attached to the responses. In Procedural Order No. 4, the OEB made provision for submissions by the OEB staff and the other intervening parties on OPG's requests for confidentiality. On November 21, 2016, the OEB staff and SEC filed their submissions. No other submissions were made.

OEB staff submitted that it did not object to OPG's requests for confidentiality except for 6 categories of items for which it sought further comment by OPG. SEC objected to confidential treatment of 1 interrogatory response and 3 attachments to interrogatory responses.

OPG Response to the Submissions of OEB Staff

L-04.3-2 AMPCO 045

OEB staff submitted that the information in Ex. L-04.3-2 AMPCO 045 may have been incorrectly categorized as confidential due to collective bargaining sensitivity. OEB staff is correct. OPG's request for confidential treatment of the response to part (b) of this interrogatory is due to the SNC/Aecon JV having specifically requested that the information or type of information be protected. The current request for confidential treatment is made pending the OEB's ruling on this issue.

L-06.6-1 Staff 157

OPG's response in Ex. L-06.6-1 Staff 157 included two attachments that were filed entirely in confidence. Additionally, the names of these attachments in the interrogatory response were

redacted. OEB staff invited OPG to comment on whether it would be reasonable to release the title of attachments in the interrogatory response and to redact only portions of the attachments, as opposed to filing the entire reports confidentially. OPG has re-assessed and sought third party consent. OPG is releasing the titles of the reports and is resubmitting the reports with redactions rather than as confidential in their entirety. The proposed redactions are provided in Attachment A, which also identifies the specific page numbers where the redactions are located in each of Attachment 1 and 2 to L-06.6-1 Staff-157 and the specific reasons for each request.

L-04.3-15 SEC 023

OEB staff submitted that OPG had not provided a reason for its request to treat the information provided in Ex. L-04.3-15 SEC 023 as confidential. The reason for OPG's request for confidential treatment of the response to this interrogatory is that it contains information for which two of OPG's DRP counterparties, Candu Energy Inc. and the SNC/AECON JV have requested protection. The current request for confidential treatment is made pending the OEB's ruling on this issue.

OEB staff also noted that parts of the first redacted paragraph in the interrogatory response appeared to be of a general nature and asked OPG to comment on the reasonableness of redacting only select portions and leaving the remainder un-redacted. As the underlying information is the subject of both the SNC/AECON JV and Candu Energy's confidentiality claims, and these intervenors have made their own submissions, OPG has no further submissions on this matter.

L-06.3-2 AMPCO 116, L-06.6-15 SEC 085, L-06.7-2 AMPCO 115 and L-07.12-1 Staff 205

OEB staff noted that OPG had not provided reasons explaining why the information in these interrogatories should be held in confidence. OEB staff is correct. OPG inadvertently omitted this group of responses from its October 26, 2016 letter. OPG seeks confidential treatment for these responses as they include OPG and third party commercially sensitive information. Specific rationale for each interrogatory response is provided below.

L-06.3-2 AMPCO 116 provides historic and forecast nuclear fuel processing costs. OPG believes that this information should be treated as confidential and commercially sensitive, as disclosure of these actual and forecasted amounts allows for the determination of unit pricing being paid to the vendors. Disclosure of such information would be substantially prejudicial to the vendors as it would allow their competitors to infer information about their contracts with OPG, which could be used unfairly against the vendors. Further, it would prejudice OPG's competitive position and significantly interfere with its negotiations in future like contracts.

L-06.6-15 SEC 85 provides expected long-term returns for each asset class of the OPG registered pension plan, calculated by AON Hewitt (AON). This information should be protected as confidential because it is proprietary to AON. OPG is not authorized to disclose this information publicly, but has obtained permission to provide this information on a confidential basis to necessary government authorities. Disclosure on the public record would cause OPG to breach its obligation to AON. Public disclosure would also separately prejudice and cause harm to AON's business and could adversely impact OPG's ability to obtain or rely upon such information from AON in the future.

L-06.7-2 AMPCO 115 provides forecast and actual OM&A Purchased Services Support Services for 2013 to 2021 by vendor. Disclosure of such information allows for inference of contract pricing information and is likely to prejudice vendor and OPG's competitive positions and significantly interfere with their future negotiations.

L-07.12-1 Staff 205 provides used fuel volumes. This information was collected by OPG from Bruce Power on a confidential basis and is Bruce Power's proprietary information. According to the terms under which OPG was able to obtain the subject information, OPG is only able to disclose the information if it is protected as confidential by those to whom it is disclosed. Similar information was treated as confidential by the OEB in OPG's previous application, EB-2013-0321 (Procedural Order No. 8).

L-04.3-15 SEC 022 and L-04.3-15 SEC 25

The OEB staff sought clarification on the number of documents for which OPG had requested confidential treatment in relation to Ex. L-04.3-15 SEC 022. Further, the OEB staff invited OPG to identify which category of confidentiality each redaction had been proposed under. In total, OPG requested confidential treatment of 4 documents included in the response to this interrogatory. They reside in Tabs 2, 3, 18 and 19 of Attachment 2. The reason it appeared that the letter was requesting confidentiality for more than 4 documents was that some of the documents included more than one category of confidential information. OPG provides the table below to clarify its confidentiality request with respect to this interrogatory.

Attachment	Location	Reason for Confidentiality
Attachment 2, Tab 2	p. 12-13 of 52	Contractor requested confidential information – These documents contain information for which confidential treatment is being requested due to one of OPG's DRP contract counterparties having specifically requested that the information or type of information be protected. The relevant counter party the SNC/AECON JV. The current request for confidential treatment is made pending the OEB's ruling on this issue.
Attachment 2, Tab 3	p. 10, 23, 31-37 of 81	
Attachment 2, Tab 18	p. 19 of 22	
Attachment 2, Tab 19	p. 2-3 of 6	
Attachment 2, Tab 3	p. 6	This information was inadvertently redacted, and OPG takes no position on the confidential treatment of this information.
Attachment 2, Tab 3	p. 1-2 of 81	Names of individuals – In its Procedural Order No. 3, the OEB granted confidentiality for names of individuals wherever they appear in the DRP contracts.

The OEB staff also observed that OPG had not provided reasons explaining why the information in Ex. L-04.3-15 SEC 025, Attachment 1 should be held confidential. The basis for OPG's request is that pages 14 and 73 of this attachment contain certain commentary on the performance of specific DRP contractors. Public disclosure of this information could potentially prejudice the competitive positions of the relevant contractors. Public disclosure of this commentary could also give rise to adverse impacts on existing contractual relationships that OPG has with the relevant contractors or on contracts those contractors have with others.

L-04.3-15 SEC 014

OPG's response to L-04.3-15 SEC 014 included an attached report that was submitted entirely in confidence. The OEB staff invited OPG to consider whether the attachment could be filed with only portions redacted, as opposed to the entire document. The report was initially filed entirely in confidence based on the request of the third party author of the report. OPG has since

discussed the OEB staff's concern with the third party author of the report and has obtained consent to file the report publically with a more limited set of redactions. The proposed redactions are provided in Attachment A.

OPG Response to the Submission of SEC

L-06.6-19 SEP 013

SEC disagrees with OPG's request to treat portions of Table 2 in Ex. L-06.6-19 SEP 013, which shows forecast attrition over the application term by representation, as confidential. SEC's grounds for objection was that Table 2 was only for the regulated nuclear organization and moreover, OPG had in Table 1 of the same interrogatory provided the forecast total employee count per year without any redactions. OPG respectfully disagrees with SEC's objection. The nature of information provided in Table 2 is different than that of Table 1. Table 1 provides projected headcount for nuclear in OPG's business plan which is subject to change by OPG through the business planning process and is only part of the overall OPG headcount. Table 2 provides expected attrition by representation, which if disclosed, could potentially interfere with future collective bargaining negotiations between OPG and the unions that represent its employees as to staffing expectations.

L-06.6-1 Staff 147, Attachments 1 and 2

SEC challenged OPG's request to treat Attachments 1 and 2 to L-06.6-1 Staff 147 as confidential. SEC's basis for its submission with respect the Attachment 1 was that OPG had been instructed in the letter to communicate the bargaining mandate to PWU and Society and therefore, the content of the letter should not be confidential for the purposes of labour relations as originally requested by OPG. SEC's basis for its submission with respect to Attachment 2 was that this letter was simply an acknowledgement from the then Minister of Energy to OPG that the agreement reached between OPG and the PWU, had met the bargaining mandates set out in the first attachments and as such should not be confidential.

SEC's position is reasonable and OPG is placing a copy of both letters on the public record in Attachment A.

L-04.3-15 SEC 014

SEC objected to confidential treatment of Attachment 1 to Ex. L-04.3-15 SEC 014, on the basis that the report did not include any proprietary information given that (1) the project data is presented on an aggregate basis, (2) all the major contracts for DRP have already been signed, and (3) despite the distribution limitation clause at the bottom of each page of the report, the report is not an off-the-shelf publication and rather, a customer benchmarking report, conducted by OPG. As discussed above, in response to the OEB staff's submissions on the same interrogatory response, following further discussions with the third party author of the report (Faithful+Gould), OPG is filing the report with a more limited set of redactions. The information that the third party author has asked to continue to be redacted is claimed to be proprietary information of the third party author, and as such, OPG is not authorized to disclose this information publically. Disclosure on the public record would cause OPG to breach its obligation to Faithful+Gould, prejudice Faithful+Gould's business and adversely impact OPG's ability to obtain or rely upon such information from Faithful+Gould in the future.

All of which is respectfully submitted.

[Original Signed By Saba Zadeh on behalf of]

Barbara Reuber
Regulatory Affairs
Ontario Power Generation

Cc: Carlton Mathias (OPG) via email
Charles Keizer (Torys LLP) via email
Crawford Smith (Torys LLP) via email

Attachment 'A'
Non-Confidential Documents

Exhibit	Attachment	Location of Confidential Information	Reason(s) for Confidentiality Request
L-06.6-1Staff 157	1	p. 2-3, 7-16, 18-22	Information on OPG's collective bargaining strategies (Labour Relations Sensitivity) - Disclosure could potentially interfere with future collective bargaining negotiations.
	2	p. 23, 25 Odd pages from p. 33-81 Odd pages from p.89-99 Odd pages from p. 103-113 Odd pages from p.117-135 Odd pages from p. 139-147	Information on OPG's collective bargaining strategies (Labour Relations Sensitivity) - Disclosure could potentially interfere with future collective bargaining negotiations.
		p. 3, 34, 36, 38, 42, 44, 46, 48, 52, 54, 58, 60, 62, 66, 70, 72, 74, 152-199	Proprietary Information of Third Party - Information is proprietary to AON, produced on confidential basis on consent from Aon.
L-04.3-15 SEC 014	1	p. 9-10, 17-21	Proprietary Information of Third Party - Information is proprietary to Faithful+Gould, produced on confidential basis on consent from Faithful+Gould.
L-06.6-1 Staff 147	1 and 2	No redactions.	

Board Staff Interrogatory #157

Issue Number: 6.6

Issue: Are the test period human resource related costs for the nuclear facilities (including wages, salaries, payments under contractual work arrangements, benefits, incentive payments, overtime, FTEs and pension costs, etc.) appropriate?

Interrogatory

Reference:

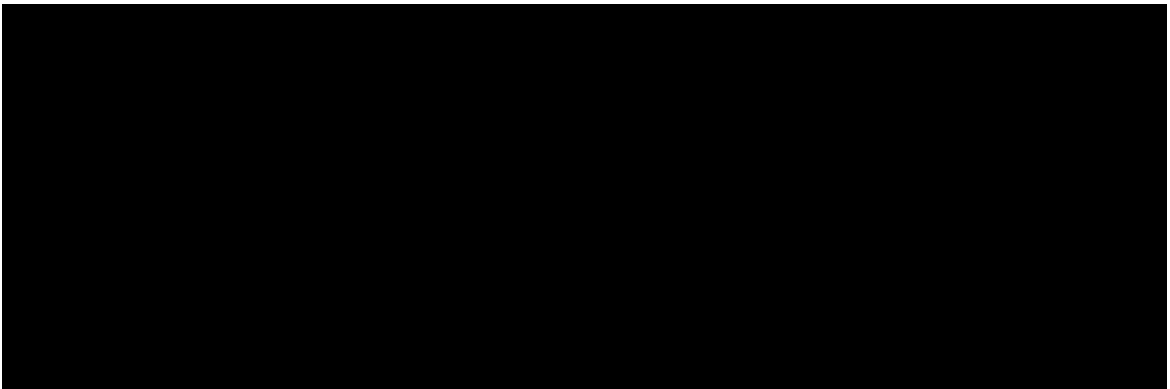
Ref: Exh F4-3-2

Ref: EB-2013-0321 Exhibit JT2.12, Attachment 1

In EB-2013-0321, OPG filed a CHRC Briefing Report prepared by Towers Watson. The report reviewed the challenges OPG was facing regarding the costs of its employee pensions and benefits.

- a) The report filed in EB-2013-0321 had last been updated in 2013. Has the report been updated since then? If so, please provide a copy.
- b) Has OPG received any other reports regarding the costs and sustainability of its employee pensions and benefits? If so, please provide.
- c) The report assessed the sustainability of OPG's pensions and benefits plans against four metrics. The report concluded that all four metrics had been exceeded (p. 2, 6- 9). Does OPG still exceed the thresholds established in all four metrics?
- d) The report identified six "interventions" that OPG could undertake to improve the sustainability of its pensions and benefits. Please describe what activities OPG has taken with regard to these six interventions, and the results of these activities.
- e) At page 2, the report states that (as of 2013) "OPG's P&B plans are unsustainable". At page 11 it states: "a number of current cost levels exceed the thresholds which OPG views as necessary to maintain a sustainable business (across all key measures)". Are OPG's pensions and benefits plans currently sustainable? Do the current costs of pensions and benefits allow OPG to maintain a sustainable business? If not, how does OPG plan to address this situation? Will ratepayers be asked to provide additional funding for pensions and benefits now or in the future?
- f) At page 11, the report states: "the risk of costs escalating far beyond an affordable level is very plausible." Is this statement still accurate?

Response

- a) No, the report has not been further updated since 2013.
- b) OPG has obtained the following externally prepared reports regarding the costs of OPG's pension and benefit program costs, attached to this response as Attachments 1-2. Attachments 1-2 are being filed confidentially in accordance with the Board's practice direction on confidential filings.
- a. Potential Changes to Pension and Benefits Programs for Represented Members – Prepared by AON Hewitt, June 2014
 - b. Benefit Index Report (value based benchmarking) – Prepared by AON Hewitt, July 2013,
- c) OPG does not update or monitor the four referenced metrics found in the briefing at EB-2013-0321, Ex. JT2.12, Attachment 1. For the purposes of this interrogatory, OPG estimated the values for each of the metrics and determined that from 2015 -2021, most of the values are within their threshold values as stated in the report.
- d) It should be noted that while the six "interventions" were observations into areas that Towers Watson believed might be worth pursuing, they did not represent specific recommendations for management. With reference to these six observations from the Towers Watson report, OPG has undertaken the following activities :
- 1) Pensionable Earnings & Future Wage Increases: As described in Ex. F4-3-1, pp. 15 - 18, the lump sum payments and Hydro One shares awards negotiated with the PWU and Society in exchange for the identified pension reforms, are non-pensionable payments that will be made only to eligible existing employees as of April 1, 2015 (for PWU) and January 1, 2016 (for Society).
 - 2) 
 - 3) Pension Design: As described in Ex. F4-3-1, pp.15 - 16, a number of pension reforms were introduced for management group staff and negotiated through bargaining for represented employees. Considerable effort was required to negotiate these reforms which included the direct involvement of the Government and other

electricity sector stakeholders. These reforms reduce costs associated with OPG's pension plan by immediately increasing employee contributions, changing the rules used to determine when an employee becomes eligible for an undiscounted pension, and increasing the number of years used to determine pensionable earnings.

- 4) Drug Costs: In November 2014, following a competitive procurement process, OPG selected Sun Life Financial (Sun Life) as its new Health and Dental benefits administrator. As part of their service, Sun Life has been able to negotiate savings for various high use prescription medications to provide plan sponsors, such as OPG, with reduced costs. Sun Life has also developed mobile applications that give plan members convenient drug information more quickly including drug coverage, potential generic and/or therapeutic drug alternatives and other cost-saving opportunities.
- 5) Voluntary Settlement for Post-Retirement Benefits: OPG has not pursued this intervention that was identified for consideration in the Towers Watson report (p.12). In the Towers Watson report, this intervention was assessed as having low benefit and high cost.
- 6) Health and Dental Plan Administration: As noted above, OPG completed a competitive procurement process and selected Sun Life Financial as its benefits administrator in 2014. The new contract is delivering savings through lower administration costs and more stringent adjudication against plan terms reflecting OPG's commitment to cost efficiency efforts.
- e) Using metrics estimated in part (c) based on current projections, OPG's pensions and benefits are currently "sustainable" and allow OPG to "maintain a sustainable business".
- Overall, OPG believes that the "sustainability" of the plan is improving, reflecting the above noted reforms, stable or gradually decreasing cash requirements, declining accounting costs, and a strong funded position of the pension plan according to the latest actuarial valuation filed with the Financial Services Commission of Ontario, as of January 1, 2016. The valuation indicates that the pension plan is 96% funded on a going concern basis and 99% on a solvency basis (see Ex. L-6.6-1 Staff-156, Attachment 1, pp. 9 and 15).
- OPG will continue to seek recovery of its prudently incurred pension and benefit costs for the regulated operations through its payment amounts applications.
- f) Although OPG does not update or maintain the stochastic analysis relied upon by Towers Watson to support the referenced statement, based on current projections, OPG does not believe that the referenced statement from the 2011 report is true today, for the reasons discussed in part (e). However, OPG acknowledges that there are inherent risks related to the impact of financial market conditions on pension and OPEB obligations, as with any material obligations that span several decades. This is acknowledged in the summary of key risks to OPG's business plan, as discussed in Ex. L-1.2-5 CCC-4.

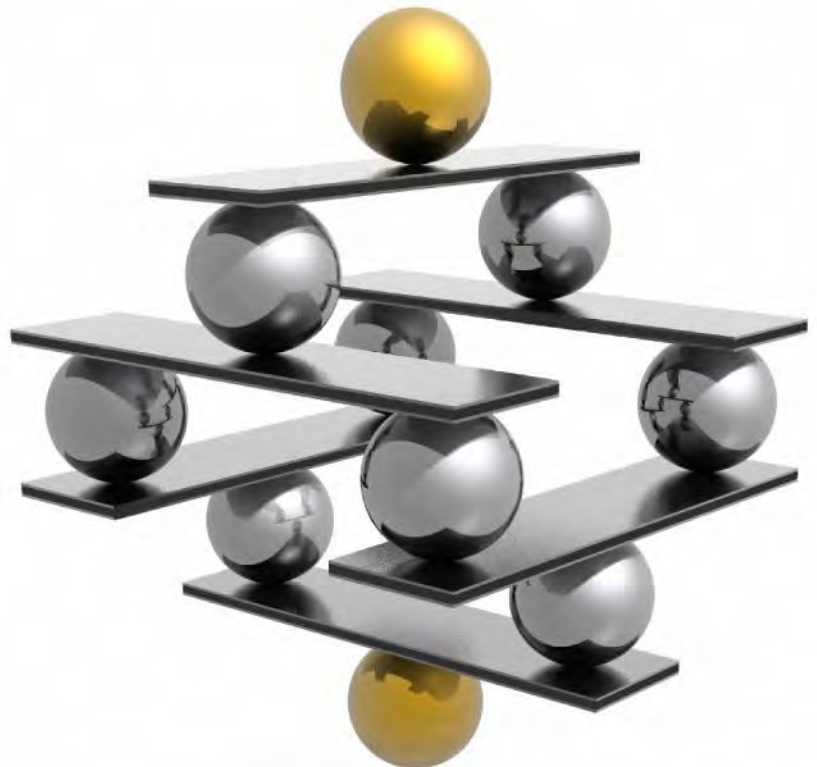
Aon Hewitt

Potential Changes to Pension and Benefits Programs For Represented Members

**Privileged and Confidential –
Prepared in Contemplation of Possible Litigation**

Ontario Power Generation

*June 2014
Confidential – Draft for Discussion*



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Introduction

Ontario Power Generation ("OPG") recently announced changes to the OPG Pension Plan ("Pension Plan") and the OPG Supplementary Pension Plan ("SPP") for non-represented (i.e., Management Group) staff.

OPG has requested that Aon Hewitt prepare cost estimates of extending the changes to represented staff as well as provide cost estimates for other requested plan changes. All the cost estimates are based on the January 1, 2014 actuarial valuation of the Pension Plan.

Summary of Key Changes for Management Group

OPG Pension Plan

- Migrate to 50/50 sharing of cost for current service cost:
 - A contribution schedule has been developed in two phases with an increase in contributions for Management Group employees effective January 1, 2016 and a second increase effective January 1, 2017.
 - Management Group employees hired by OPG on and after July 1, 2014 will pay the January 1, 2017 contribution rate from date of hire.
 - [REDACTED]
- Transition from unreduced retirement at 84 points ("Rule of 84") to unreduced retirement at 90 points ("Rule of 90"):
 - Members with 84 points on January 1, 2016 would retain eligibility for unreduced pension for all service.
 - For all other members, benefits earned for service on and after January 1, 2016 will be subject to Rule of 90 rather than Rule of 84.
 - Benefits earned for service prior to January 1, 2016 will continue to be subject to Rule of 84.
 - Management Group employees hired by OPG on and after July 1, 2014 will have all benefits subject to Rule of 90.
- Elimination of enhanced early retirement benefits for employees who terminate prior to retirement eligibility.

OPG SPP

- Mirror design changes in RPP
- Change eligibility rules for ESPS



Summary of Current OPG Pension and Supplemental Plans

OPG Pension Plan

OPG sponsors a defined benefit plan for employees. The key provisions of the pension plan are shown below.

Pensionable Earnings	Base earnings plus bonus up to 5% of base earnings
Averaging Period For Earnings	3 years
Benefit Rate After Age 65	
Below CPP Wage Base	1.50%
Above CPP Wage Base	2.00%
Benefit Rate Before Age 65	2.229%
Subsidized Payment Form	
With Spouse	66⅔% J&S
Without Spouse	LG5
Eligibility For Unreduced Early Retirement Pension	The earliest of: ▪ 82 points (84 points for Non-Represented) ▪ Age 60 with 25 years of service ▪ 35 years of service
Early Retirement Reductions (Age 55 and Over)	▪ 25 or more years of service – 3% per year prior to age 60 ▪ 15 but less than 25 years of service – 2% per year from ages 65 to 60, plus – 3% per year from ages 60 to 55 ▪ Less than 15 years of service – Actuarial reduction
Automatic Indexation of Pension Benefits	100% of CPI (Ontario) up to 8% (with carry forward)
Member Contribution Rates	
Below/Above CPP Wage Base	PWU: 5.0% / 7.0% Society: 7.0% Non-Represented: 7.0% or 7.6%/9.5% if hired after July 1, 2014



OPG Supplementary Pension Plan

OPG provides pension benefits above the *Income Tax Act* (ITA) maximum pension limit, for post-1991 service, through the OPG SPP. Benefits earned for service prior to 1992 are not limited by the ITA maximum pension. The OPG SPP is composed of two broad-based supplemental schedules:

- Supplementary Payment Schedule (SPS),
- Executive Supplementary Payment Schedule (ESPS)

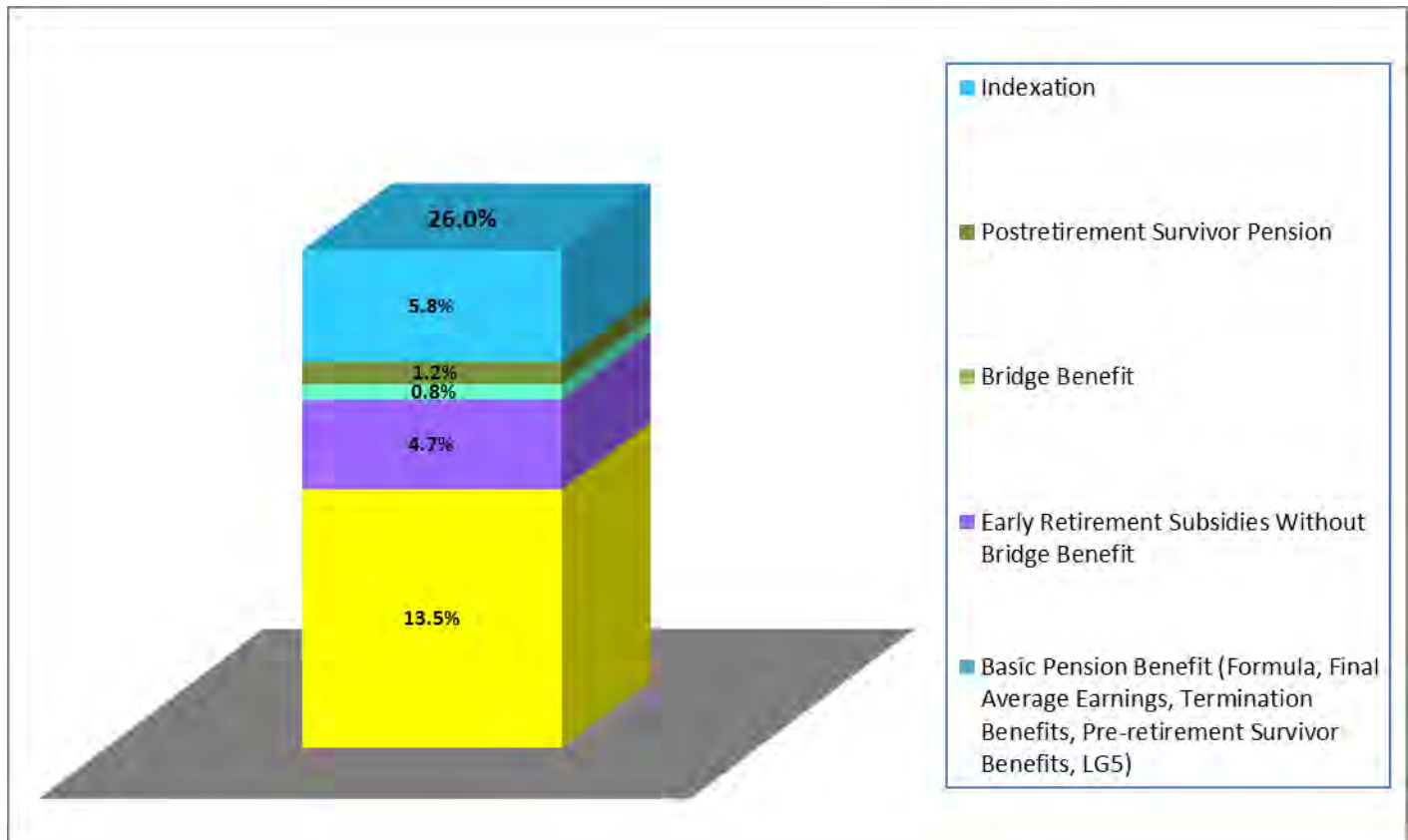
The details of the OPG SPS are as follows:

- Mirrors the OPG Pension Plan in every detail (pensionable earnings, formula, early retirement, indexation)
- No member contributions are made to SPS
- SPS is closed to new non-represented members hired into Band H or higher
- PWU and Society members are covered by SPS

Represented members are not eligible for the ESPS.



Ontario Power Generation Pension Plan— Breakdown of Total Current Service Cost as a Percentage of Earnings by Benefit Component (based on January 1, 2014 actuarial valuation)





Maximum Contribution and Benefit Provisions Under the *Income Tax Act*

It is first important to understand the *Income Tax Act* restrictions on both member contributions to and benefits earned from a registered pension plan, and how those limits impact members of the Pension Plan.

Maximum Member Contribution in 2014 Under the *Income Tax Act*

The dollar limit on the maximum member contribution in 2014 is calculated as follows:

$$\begin{aligned} & \$1,000 + (70\% \times \text{maximum pension credit in 2014}) \\ & = \$1,000 + (70\% \times ((9 \times \$2,770.00) - \$600)) \\ & = \$18,031.00 \end{aligned}$$

Maximum Pension Under the *Income Tax Act*

The maximum pension benefit under the *Income Tax Act* in 2014 is \$2,770.00 per year of pensionable service.

Based on the benefit formula under the OPG Pension Plan, the maximum pension is reached in 2014 at a highest 3-year average earnings of approximately **\$151,000**.

Interaction of Maximum Contribution and Maximum Pension Limits

¹ [REDACTED]



[REDACTED]

Under the January 1, 2014 actuarial valuation, the total current service cost for all employee groups is 26.0% of pensionable earnings.

[REDACTED]

[REDACTED]

[REDACTED]



Schedule of Increases for Management Group

Management Group employees will transition from a flat 7% of pensionable earnings to the following percentages of pensionable earnings up to and above the YMPE:

- | | | | |
|--------------------|--|---|--|
| ▪ January 1, 2016: | 7.30% up to YMPE plus 8.25% above YMPE | } | Will be formally adopted
in plan text |
| ▪ January 1, 2017: | 7.60% up to YMPE plus 9.50% above YMPE | | |
| ▪ | [REDACTED] | } | [REDACTED] |
| ▪ | [REDACTED] | | |
| ▪ | [REDACTED] | | |
| ▪ | [REDACTED] | | |

Notes

- [REDACTED]
- [REDACTED]
- [REDACTED]
- OPG intends to apply for a waiver of the maximum member contribution limit prior to 2016
- [REDACTED]
- Management employees hired on or after July 1, 2014 will contribute at the January 1, 2017 contribution rate from date of hire



[REDACTED]

PWU members participating in the OPG Pension Plan currently contribute at 5.0% of pensionable earnings up to the YMPE (\$52,500 in 2014) plus 7.0% of pensionable earnings above the YMPE, compared to the current Management Group and Society Group which contribute at 7.0% of all pensionable earnings.

[REDACTED]

- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]

[REDACTED]

- [REDACTED] [REDACTED]
- [REDACTED] [REDACTED]
- [REDACTED] [REDACTED]
- [REDACTED] [REDACTED]
- [REDACTED] [REDACTED]
- [REDACTED] [REDACTED]

Data Used for Analysis

The analysis is based on data provided by OPG for the 2014 Pension Plan valuation. The characteristics of the PWU group are shown below:

- Number of Active Members: 6,006
- Average Pensionable Earnings (2014): [REDACTED]
- Total Pensionable Earnings (2014): [REDACTED]
- Number of Members with Earnings in Excess of \$151,000 (2013): [REDACTED]

.



[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

- [REDACTED]
- [REDACTED]
- [REDACTED]

[REDACTED]



[Redacted text]

[Redacted text]



[REDACTED]

Society members participating in the OPG Pension Plan currently contribute at the same level as Management Group employees – 7.0% of all pensionable earnings. [REDACTED]

[REDACTED]

[REDACTED]

■	[REDACTED]	[REDACTED]
■	[REDACTED]	[REDACTED]
■	[REDACTED]	[REDACTED]
■	[REDACTED]	[REDACTED]
■	[REDACTED]	[REDACTED]
■	[REDACTED]	[REDACTED]

Data Used for Analysis

The analysis is based on data provided by OPG for the 2014 Pension Plan valuation. The characteristics of the Society group are shown below.

- Number of Active Members: 3,164
- Average Pensionable Earnings (2014): [REDACTED]
- Total Pensionable Earnings (2014): [REDACTED]
- Number of Members with Earnings in Excess of \$151,000 (2013): [REDACTED]



[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

- [REDACTED]
- [REDACTED]
- [REDACTED]

[REDACTED]



[Redacted text]

[Redacted text]

[Redacted text]



Current Early Retirement Provisions Under OPG Pension Plan

The current early retirement provisions under OPG Pension Plan are summarized below:

- Unreduced early retirement pension available at 82 points for PWU and Society Members, regardless of age
- Unreduced early retirement pension also available after attaining age 60 with 25 or more years of continuous service or at any age with 35 or more years of continuous service (both of these provisions are not relevant with the Rule of 82 however, would become relevant if that rule is changed)
- Reduced early retirement available after age 55:
 - For a member less than age 60 but with more than 25 years of continuous service, reduction is 3% per year from age 60
 - For a member with 15 or more years of continuous service but less than 25 years of continuous service, reduction is 2% per year from ages 65 to 60 plus 3% per year from ages 60 to 55;
 - Otherwise, pension is actuarially reduced from age 65

Early Retirement Provisions for Post-2015 Service – Management Group

- Unreduced early retirement available at earlier of:
 - 90 points
 - Age 60 with 25 years of continuous service (no change from current provisions)
 - 35 years of continuous service (no change from current provisions)
- Reduced retirement available on or after age 55 (no change to current provisions):
 - For a member less than age 60 but with more than 25 years of continuous service, reduction is 3% per year from age 60
 - For a member with 15 or more years of continuous service but less than 25 years of continuous service, reduction is 2% per year from ages 65 to 60 plus 3% per year from ages 60 to 55 otherwise, pension is actuarially reduced from age 65
- Benefits earned for service prior to January 1, 2016 continue to fall under the Rule of 84
- Management Group employees who attain Rule of 84 on or before January 1, 2016 will continue to have rule of 84 apply to all service



Early Retirement Reductions for Terminated Vested Employees

Under the OPG Pension Plan, the following terms apply to a PWU or Society member who terminates employment prior to retirement:

- An unreduced pension is available to a deferred vested member at the earlier of:
 - Age 60 with 25 years of continuous service
 - 82 points, based on age at pension commencement and continuous service at termination; or
 - Age 65
- A reduced pension is available on or after age 55:
 - For a member with 25 years of continuous service or more at termination, the pension is reduced 3% from age 60
 - For a member with less than 25 years of continuous service and less than 82 points, the pension is reduced actuarially from age 65
- The commuted value offered to a terminated member includes the value of the above early retirement subsidies if the member would be entitled to these subsidies if he or she elected a deferred pension

Example

Service at Termination	Unreduced Pension Available at Age	Points
17	65	82
18	64	82
19	63	82
20	62	82
21	61	82
22	60	82
23	59	82
24	58	82
25	57	82
26	56	82

For Management Group employees, service will be frozen at January 1, 2016 for the purpose of determining the early retirement reductions for employees who terminate prior to retirement, but after January 1, 2016.



[REDACTED]

- [REDACTED]
- [REDACTED]
[REDACTED]
- [REDACTED]
[REDACTED]
 - [REDACTED]
[REDACTED]



[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]		
[REDACTED]		
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]

[REDACTED]

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Benefit Index[®] Report

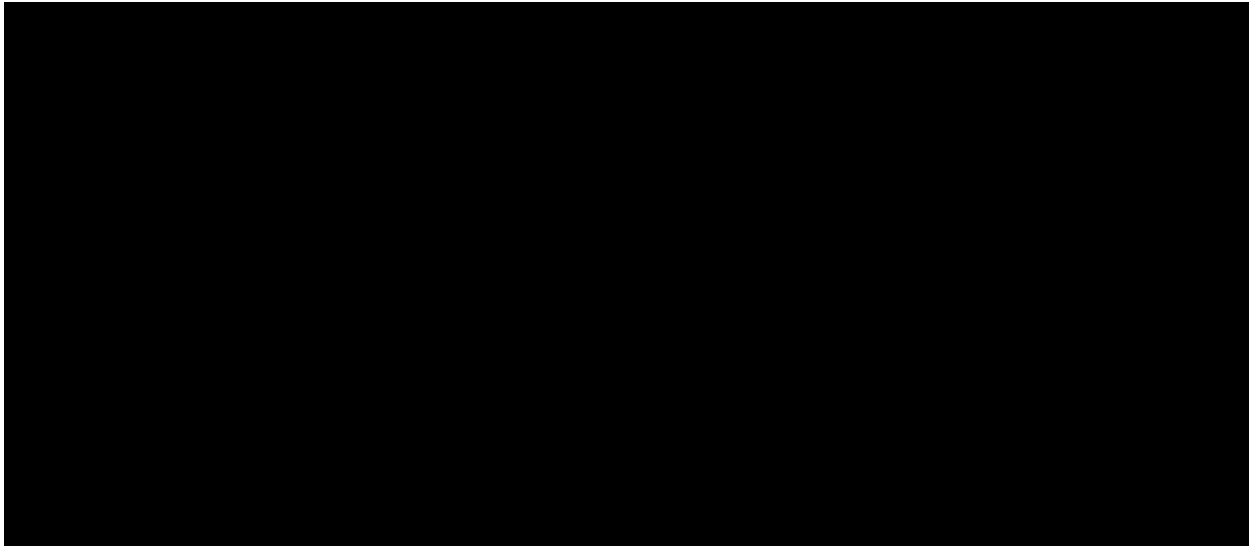
Ontario Power Generation

July 2013



About This Material

In this study, the value of the Ontario Power Generation ("OPG") salaried employee benefits program for the PWU group is compared to a norm of the values of the salaried employee benefits programs of the following 16 base companies selected by OPG:



Some of these organizations may have more than one benefits program covering salaried employees. This study is based on one program offered by each company—generally the one for corporate salaried employees. Of course, in some cases, the same benefits may be provided to both hourly and salaried employees.

This material is intended to be diagnostic in nature. One should not expect to find a prescription in this material. This study provides a thorough analysis of your benefits program as it exists today compared to the norm of these 16 base companies.

The study is divided into four major sections:

- The **Methodology** section defines the methods used in determining index values and the benefit areas that are included in this study.
- The **Index Displays** section illustrates the competitive position of each of the major elements of your benefits program (individually and in aggregate) relative to the base company norm. We have also included a summary of the major elements of the benefits programs of OPG and the base companies on facing pages.
- The **Comments** section describes the similarities and differences within the base and explains why your benefit values rank where they do relative to the 16 base company norm.
- The **Specifications** section summarizes in more detail the major elements of the benefits programs of OPG and the base companies.



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Suggested Method for Reviewing Benefit Index

The heart of this study (the Index Displays section) is a series of pages showing your organization's competitive position in each benefit area relative to the base companies. The key at the beginning of the Index Displays section outlines the format of the display pages. On each page, two comparisons are presented—the "total" value index (the outer ring) and the "employer-paid" value index (the inner ring). The total value index reflects the value of all available benefits taking into consideration anticipated participation in optional programs. The employer-paid value index is based on the excess of the total value of benefits over the value of employee contributions.

Index Values and Rankings

In any benefit area, an index of 100.0 (for either the total value index or the employer-paid value index) always indicates the average value of the base company plans. The arrows on the index displays show how the value of your plan compares to the average. For example, if your medical plan had an index of 104.1, this would mean that the value of your plan was 4.1% above average. If your medical plan had an index of 97.6, this would mean that the value of your plan was 2.4% below average.

The study also indicates where the value of your plan ranks relative to the value of the base company plans. Continuing the medical plan example, if three of the base companies had higher medical plan values than yours, your plan would rank between the third and fourth base companies (3rd/4th).

Finally, the study indicates the range of base company plan values. The shaded area in the rings showing both the total value and the employer-paid value represents the range of base company plan values.

Initial Review

After you review the key, an appropriate second step might be to quickly review the index displays for each benefit area to get an overall impression of where your organization stands and to become familiar with the various benefit areas covered. You might also want to review the first index display, which covers all benefit areas.

In-Depth Review

As a third step, we suggest reviewing the index displays in depth, considering the indexes and the rankings in light of the brief specifications (Notes) presented on facing pages. In many cases, the reasons for the relative position of your benefit and the characteristics of the base companies that ranked high and low will be obvious from studying these pages. In making this more thorough review, keep the following questions in mind:



In each specific benefit area and in the overall benefits program:

- *Is this where I thought we would be? Higher? Lower?*
- *Is this where management thinks we are?*
- *Is this where our employees think we are?*
- *If we are high, is this by design? Do we intend to be a leader in this area (or what does it mean to be a leader in this area)?*
- *If we are low, is this intentional? Is this an area that needs attention? How much priority should this area have?*
- *Is our strategy with regards to the overall benefits program still appropriate? Should we be placing more (or less) emphasis on more direct forms of compensation?*

In comparing the total value index with the employer-paid value index in each benefit area:

- *How does our use (or lack) of employee contributions change our relative position in this area?*
- *How does our overall use of employee contributions compare with others? Do we have higher contributions? Are we using employee contributions because of cost considerations? Are we using employee contributions to provide more flexibility for an employee to elect only the benefits that are needed? Are we using employee contributions because we feel employees should share the benefit cost?*
- *Has management consciously decided on the relative employer-employee sharing (through our use of employee contributions) versus other organizations?*

After completing your own analysis, you may want to read the Comments section. It contains our comments developed during our analysis of the benefits programs.



Applying the Results

These indexes and rankings, the accompanying analysis, and a manager's own view of the results should provide a comprehensive basis (and perhaps some supportive information) for review with other executives. The items to be reviewed might include:

- Whether the benefits program is providing comparative values consistent with your objectives (or to raise the question of organization objectives where they have not been formalized; or to review or question objectives when they have been formalized).
- The high and low elements of your organization's present benefits program.
- The use of employee contributions within the present benefits program.
- Suggestions for change in the benefits program:
 - For new benefits.
 - For "trading" unnecessarily high areas of coverage for improvements in low areas of coverage.
 - For increasing (or decreasing) employee contributions within the program.

This material is intended to be diagnostic in nature. It may (or may not) corroborate other analyses done by the organization's compensation and benefits management. In any event, one should not expect to find a prescription in this material. In our experience, suggestions for change come more appropriately from consideration of your organization's objectives, and careful consideration of the business and competitive environment in which your organization operates.

Methodology



Methodology

General Premises

We use different methods to value the different elements of a benefits program. In developing and refining these methods, we have used the following criteria:

- The method must give a reasonable comparison of the value of the different types of plans within a benefit area (e.g., a reasonable comparison of a final (average) pay pension formula with a career (average) pay pension formula requires an assumption about pay increases; a comparison of the value of medical benefits should not depend on whether or not the benefits are insured).
- The method must give a reasonable comparison of the overall value of the benefits program, recognizing that certain benefits are more valuable than others.

Employee Population Base

To facilitate comparisons, one common population is used in determining the relative value indexes. This population has the characteristics of the salaried personnel found in a typical Canadian organization.

This population does not represent your actual salaried employee workforce. However, we do not think the use of your actual salaried employee workforce would have significantly altered the relative values shown in this report or the conclusions to be drawn from them.

Developing the Relative Value Indexes

In general, the value of a benefit is determined in one of two ways:

- For each individual in the population, the probability of an event (such as disability) is multiplied by the lump sum value of all amounts to be paid arising from that event

OR

- A value is calculated by establishing the value as a percent of pay for the year (an allocation of postretirement values to working years).

The actuarial and employee participation assumptions used are chosen with the intention of being as “realistic” as possible. In effect, these values are summed up for all the employees in the model population, recognizing that the value of the various benefits varies with each individual’s circumstances—age, service, sex, and compensation level. The relative value in any benefit area then recognizes, on a composite basis, the value to an entire employee group—using a mix of employees who have a variety of individual circumstances.

The overall benefits program indexes are not based on an arbitrary weighting of the individual benefit plan indexes; instead, the composite indexes reflect the relative value calculated for each program for each organization. Therefore, the Defined Benefit Pension index has more impact than the Postretirement Death index in determining the All Benefits index. The composite indexes are determined by first adding



together your organization's benefit plan values for the benefit areas included and then comparing the result with the corresponding average for the base companies.

Treatment of Flexible Benefits

For companies with broad flexible benefits programs, the procedure for developing values is as follows:

- The employees in the model population are assumed to elect the various benefits in the same percentages as each employer's own experience.
- Based on these elections and the price tags associated with each option, the required employee contributions are calculated.
- The pool of flexible credits is calculated based on the employer's credit-generation formula(s).
- Flexible credits are subtracted from employee price tags to determine the net employee contribution for each option.
- Where the credits are not generated in respect of a particular benefit area, the credits are allocated to each benefit area in proportion to the price tags.
- Where the flexible credits are in excess of the price tags, these are referred to as "excess credits".

In general, when qualitatively comparing flexible benefits program designs, it is recommended that you focus on those options that either have the highest employee participation (driver of total value) or the option for which the employer pays (driver of employer-paid value).

A Note of Clarification

This study is an analysis of the value of the benefits provided within an organization's benefits program. This has been done with the objective of focusing on the question of benefits program design and is not intended to be an analysis of cost. An organization's benefits "costs" are affected not only by the benefits themselves, but also by accounting and financing decisions and background, such as:

- The use of a conservative versus a liberal basis for funding the pension plan (e.g., low discount rate versus high discount rate);
- The number of years a pension plan has been in existence and its asset performance during that time;
- Decisions to provide directly or insure a particular benefit;
- An organization's internal accounting practices (e.g., for vacation time);
- Pooling of experience among groups (e.g., a disability benefit plan covering both hourly and salaried employees).

The items in the above list do not impact the underlying value of the benefits design and therefore are not elements in this analysis. The question of whether the present funding-financing-accounting decisions are the most appropriate or the best "buy" is a separate subject.



Benefit Areas Included

The benefits included are those which have substantial value and which can be fairly compared. Additional forms of direct compensation and government-required programs are not included.

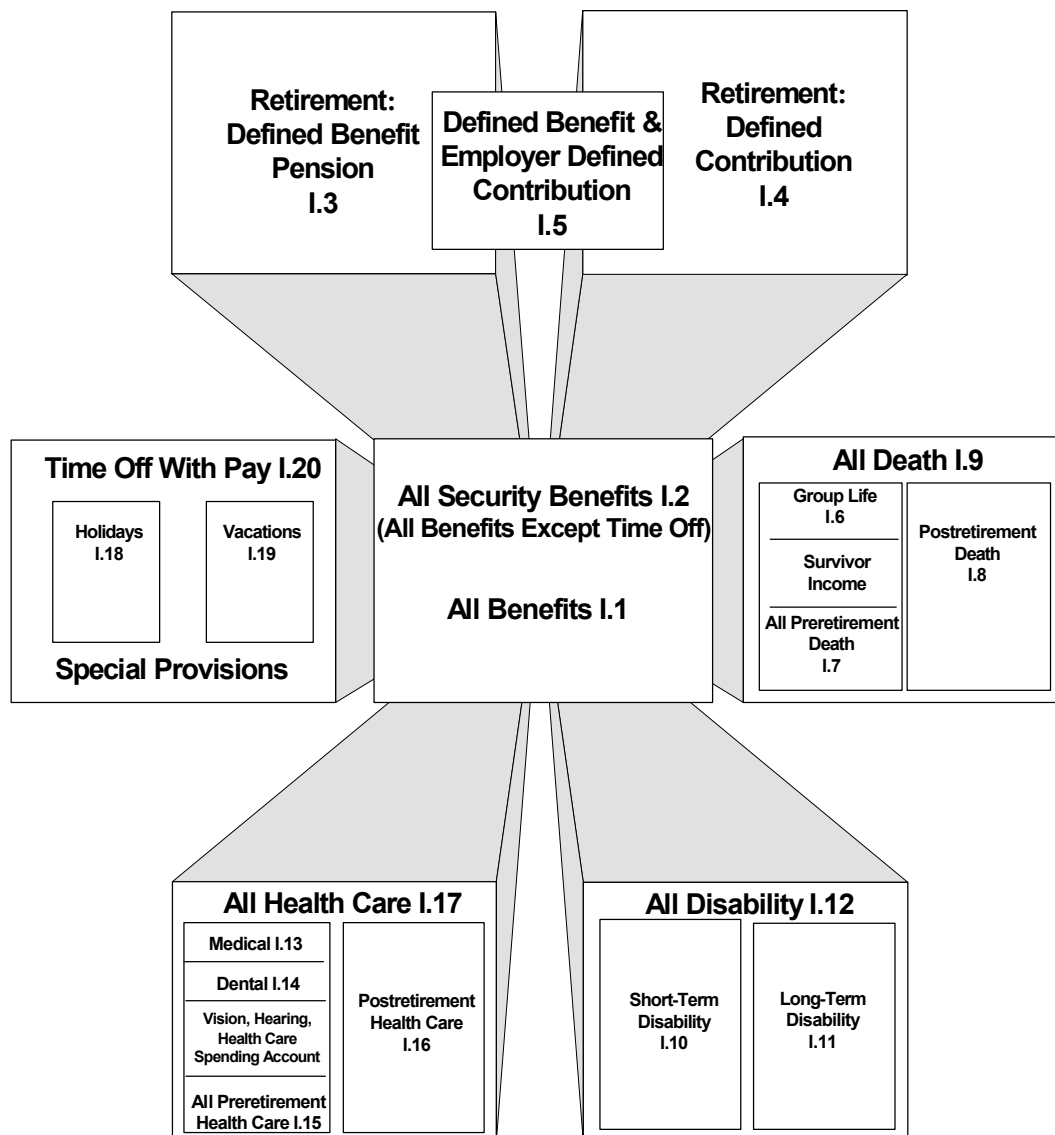
The benefits are grouped as shown below. Some of the benefits not included are benefits like severance pay, supplemental unemployment benefits, business travel accident insurance, extra individual accident coverage, tuition refund programs, matching donation programs, work and family benefits, and government-required programs.

- **Retirement**
 - **Defined Benefit Pension**
Includes all postretirement payments to an employee and spouse. Vested benefits and disability benefits payable from the pension plan after age 65 are included. Preretirement death benefits (lump sum and annuity-type) and the portion of any disability benefit payable from the pension plan prior to age 65 are not included (these benefits are reflected in the Death and Disability indexes respectively).
 - **Defined Contribution**
Includes savings, profit sharing, money purchase pension, and stock purchase plans with a direct and significant employer subsidy. Only the retirement value of defined contribution accounts has been included. Any assumed payment due to death prior to retirement has been reflected in the Death indexes. Payments that occur upon disability are considered to be retirement benefits.
- **Death**
Includes all lump sum payments and annuity or periodic payments resulting from preretirement death, including those that are insured, self-insured, or payable from the defined benefit and/or defined contribution plans. The traditional "group life" benefits have been shown in a separate index as well to allow some additional analysis. Postretirement death benefits do not include postretirement benefits which result from pensions paid on other than a life annuity basis (whether automatic or through an option); these are reflected in the Defined Benefit Pension area.
- **Disability**
Has been split into short-term disability and long-term disability by defining short-term benefits as those payable in the first six months, without regard to source. That is, the Short-Term Disability index includes long-term disability plan benefits if they are payable in the first six months of disability. Similarly, the Long-Term Disability index includes accident and sickness and salary continuation benefits payable beyond six months.
- **Health Care**
Includes the traditional hospital-medical-surgical benefits as well as dental, hearing, and vision benefits. Preretirement health care values are shown separately for medical and dental plans to allow for specific analysis of each. The Postretirement Health Care index includes not only benefits available to a retiree (including dependent coverage) who is over age 65, but also the coverage in the postretirement, pre-age 65 period for the "early" retiree.
- **Time Off With Pay**
Includes holidays and vacations, which are shown combined as well as separately, recognizing that planning decisions on the number of holidays are sometimes influenced by the amount of vacation provided and by the flexibility an employee has in scheduling vacation.



Summary of Benefits Included

The illustration below shows how benefit areas are grouped in this analysis. For example, the All Preretirement Death index includes both group life benefits and survivor income benefits (from stand-alone plans, preretirement pension death benefits, or payouts of defined contribution plan accounts). Separate index values are shown for all areas with a page number (referring to a page in the Index Displays section of this report). The size of the segments shown below does not indicate their relative importance to the overall results.

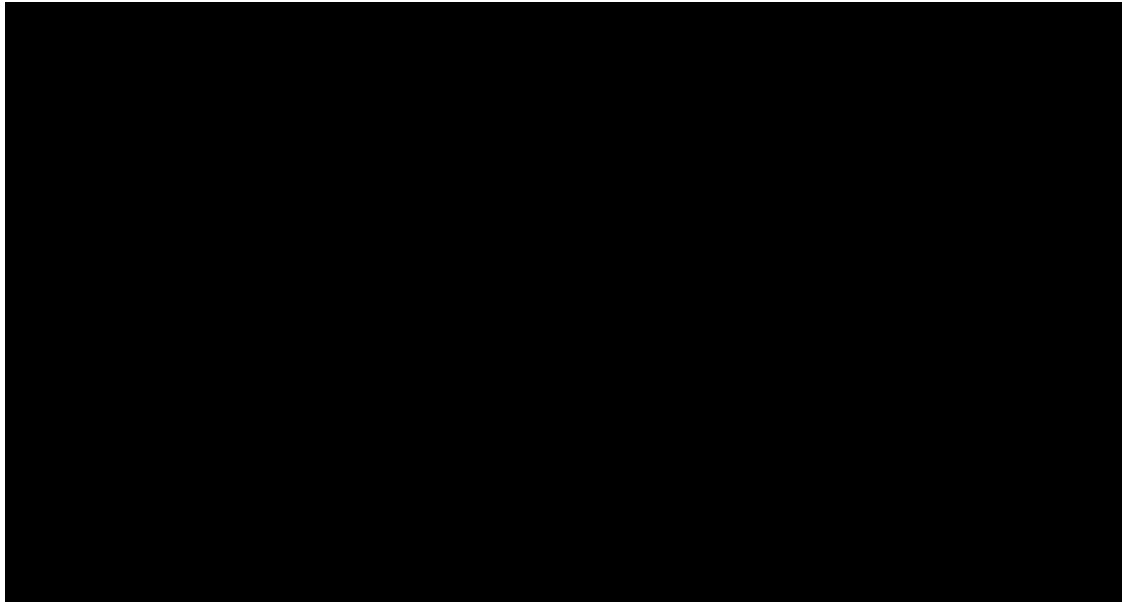




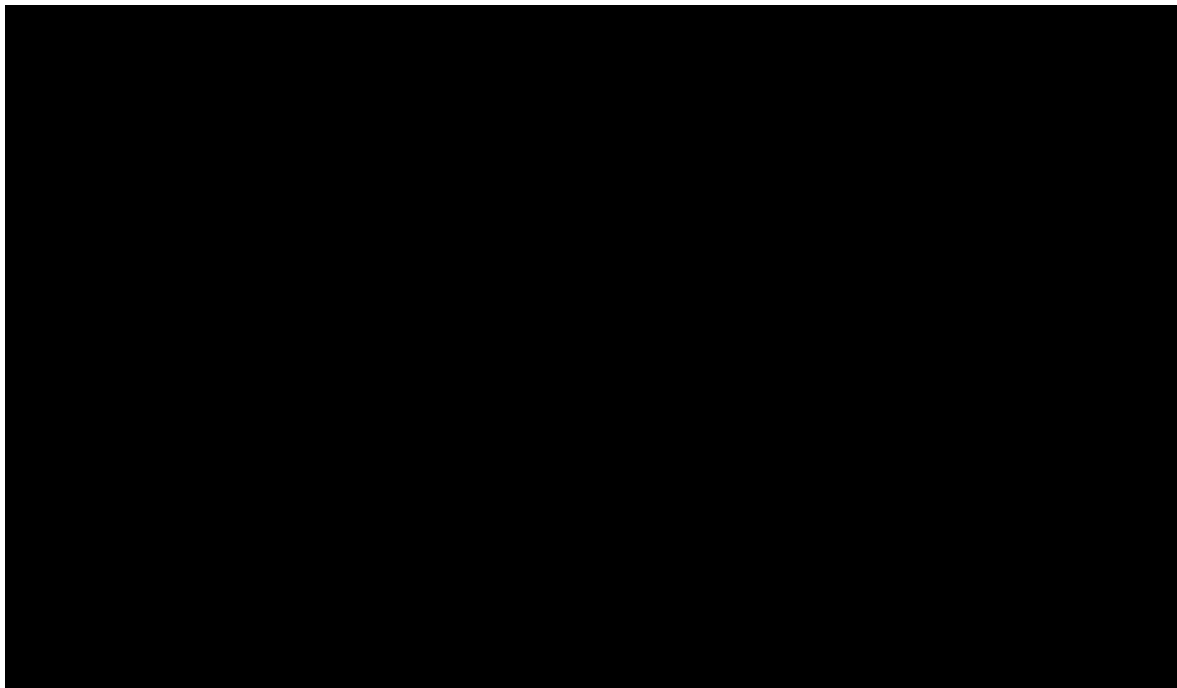
Distribution of Benefit Values

Employer-Paid Value

Base Average



Ontario Power Generation

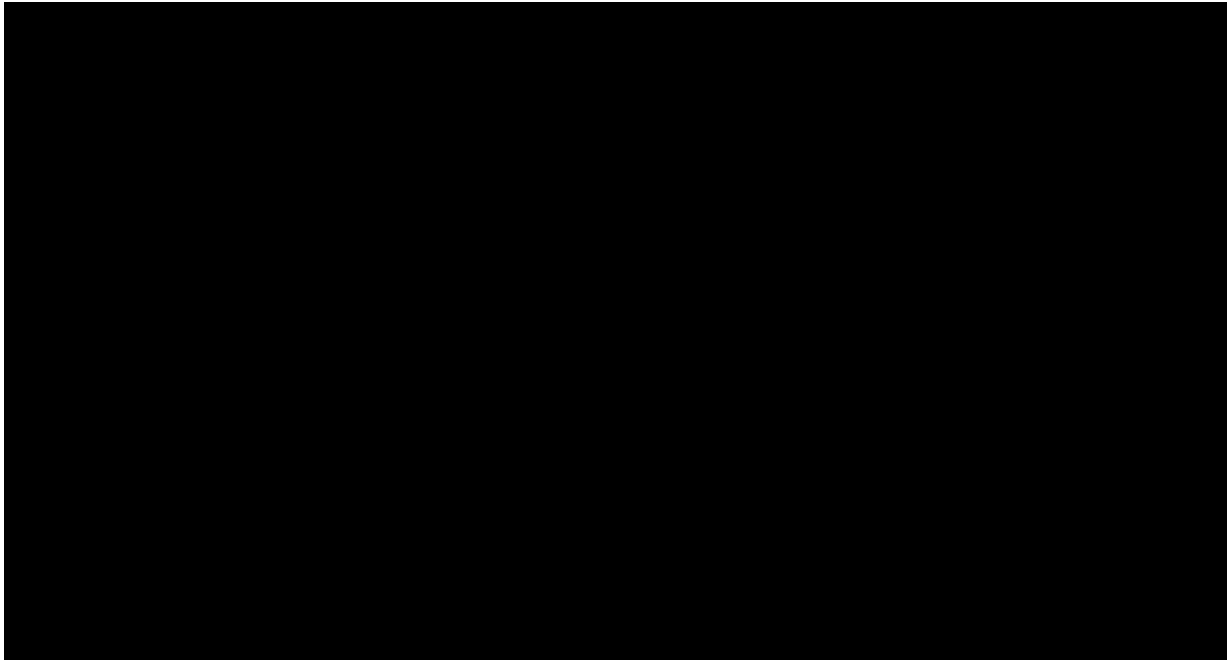




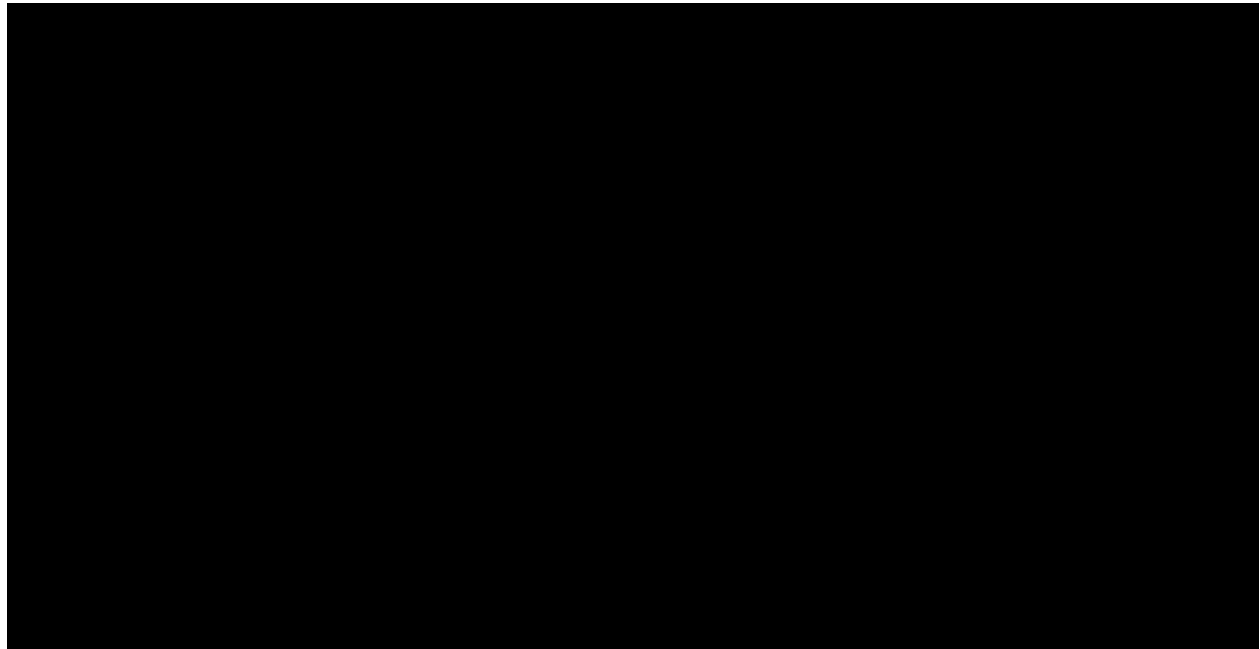
Distribution of Benefit Values

Total Value

Base Average

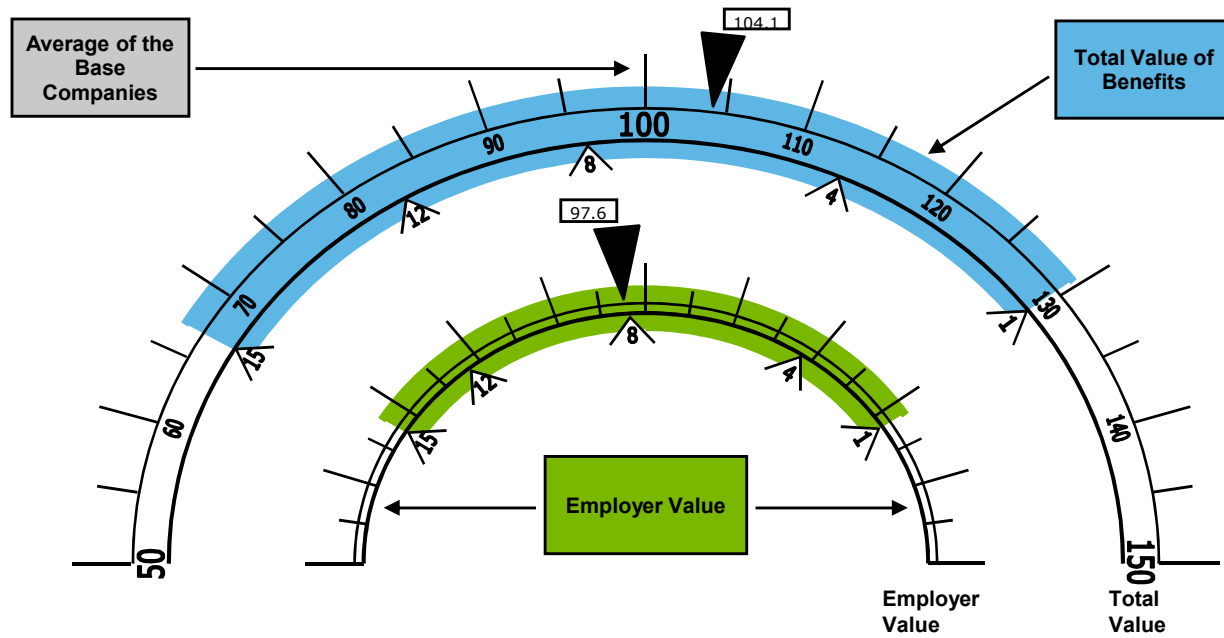


Ontario Power Generation



Index Displays

Example Only



Ranking Among Plans in Study	Employer Index	Total Index
1st	131.7	129.6
4th	118.7	113.4
8th	98.3	96.1
12th	78.4	83.2
15th	67.7	67.0

Your Position Relative to the Base Companies	Employer Value	Total Value
Index	97.6	104.1
Ranking	8th / 9th	5th / 6th

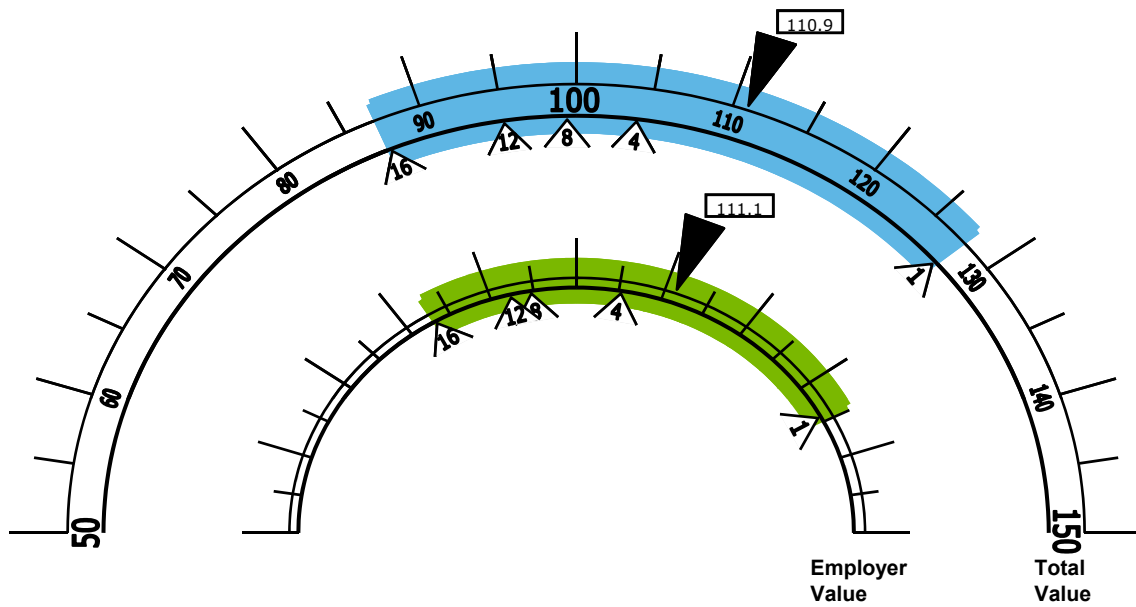


All Benefits

The benefit areas included in this index are:

- Defined Benefit Pension
- Defined Contribution
- Preretirement Death
 - Group Life
 - Survivors' Income
- Postretirement Death
- Short-Term Disability
- Long-Term Disability
- Preretirement Health Care
 - Medical
 - Dental
 - Vision and Hearing
 - Health Care Savings Accounts
 - Excess Credits
- Postretirement Health Care
 - Medical
 - Dental
 - Vision and Hearing
 - Health Care Savings Accounts
 - Excess Credits
- Time Off With Pay
 - Holidays
 - Vacations
 - "Special" Time Off Provisions

All Benefits



Ranking Among Plans in Study	Employer Index	Total Index
1st	134.4	127.5
4th	105.1	104.1
8th	94.9	99.3
12th	92.3	95.2
16th	83.3	87.2
Your Position Relative to the Base Companies	Employer Value	Total Value
Index	111.1	110.9
Ranking	2nd / 3rd	2nd / 3rd

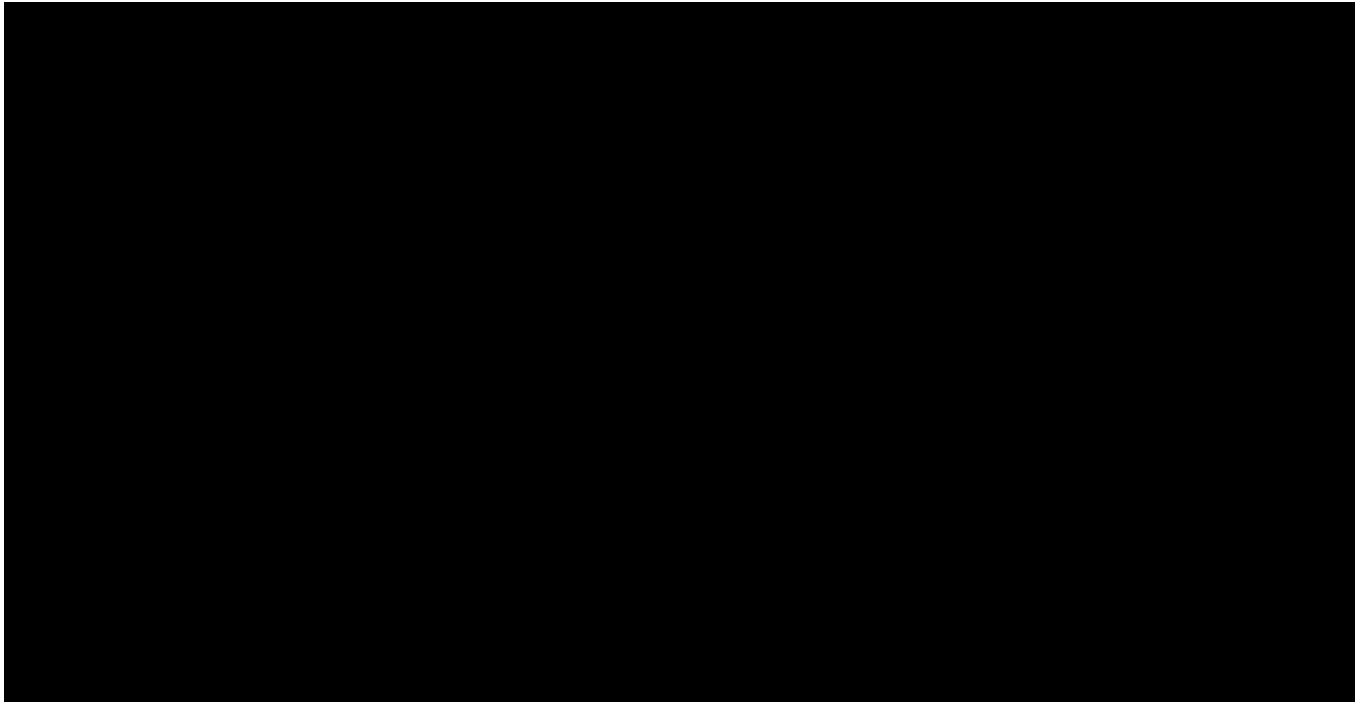


All Security Benefits

The benefit areas included in this index are:

- Defined Benefit Pension
- Defined Contribution
- Preretirement Death
 - Group Life
 - Survivors' Income
- Postretirement Death
- Short-Term Disability
- Long-Term Disability
- Preretirement Health Care
 - Medical
 - Dental
 - Vision and Hearing
 - Health Care Savings Accounts
 - Excess Credits
- Postretirement Health Care
 - Medical
 - Dental
 - Vision and Hearing
 - Health Care Savings Accounts
 - Excess Credits

All Security Benefits



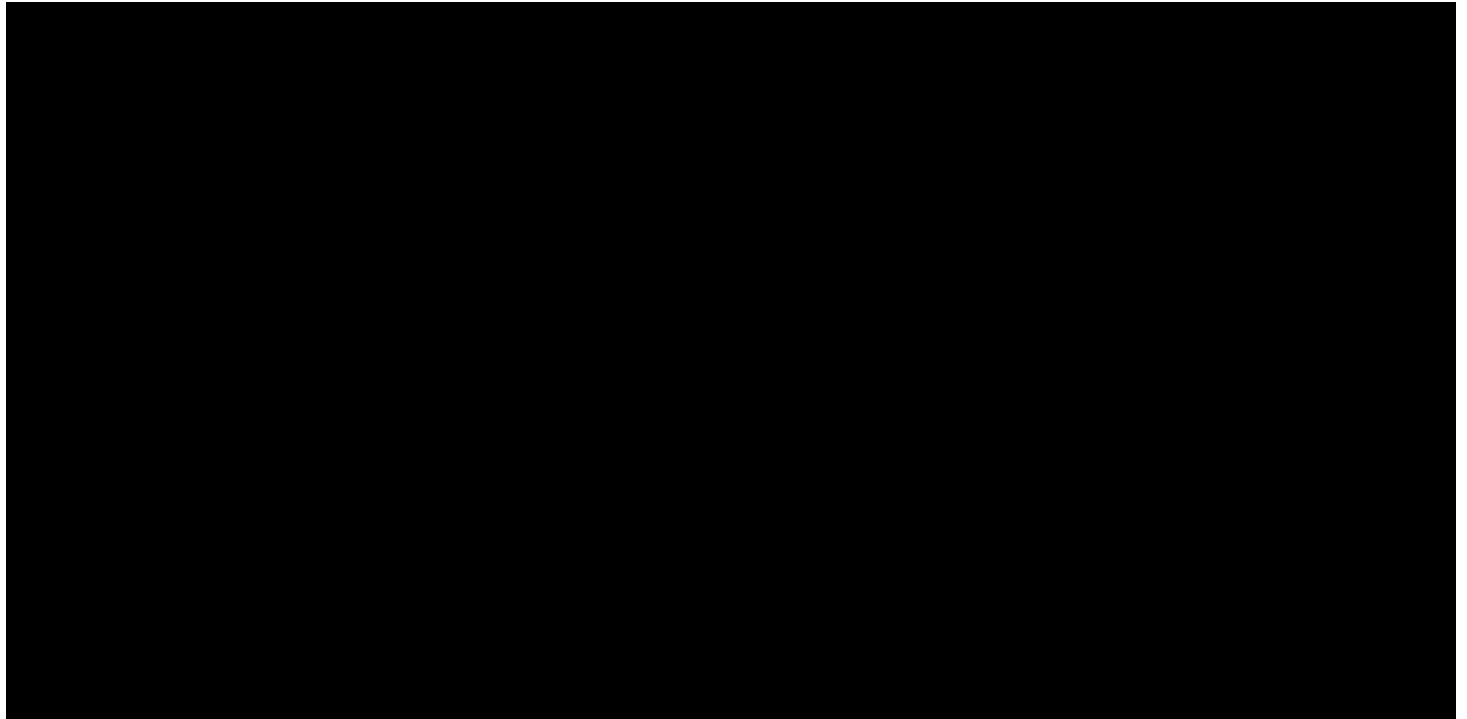
Ranking Among Plans in Study	Employer Index	Total Index
1st	████	████
4th	████	████
8th	████	████
12th	████	████
16th	████	████

Your Position Relative to the Base Companies	Employer Value	Total Value
Index	████	████
Ranking	████	████

Notes - Defined Benefit Pension

Organization	Yr. Basic Formula	Early Retirement Reduction	Subsidized Form	Employee Contributions
	average YMPE + 2.000% highest average pay over 3-year average YMPE) x participation	If < 15 years of service; otherwise 2%/year from age 65; 3%/year from age 60 (None if 82 points or 35 years) (84 points for MGMT)	and life Married: 66.67% spouse's annuity	YMPE + 7.00% of pay over YMPE (7% of pay - Management)

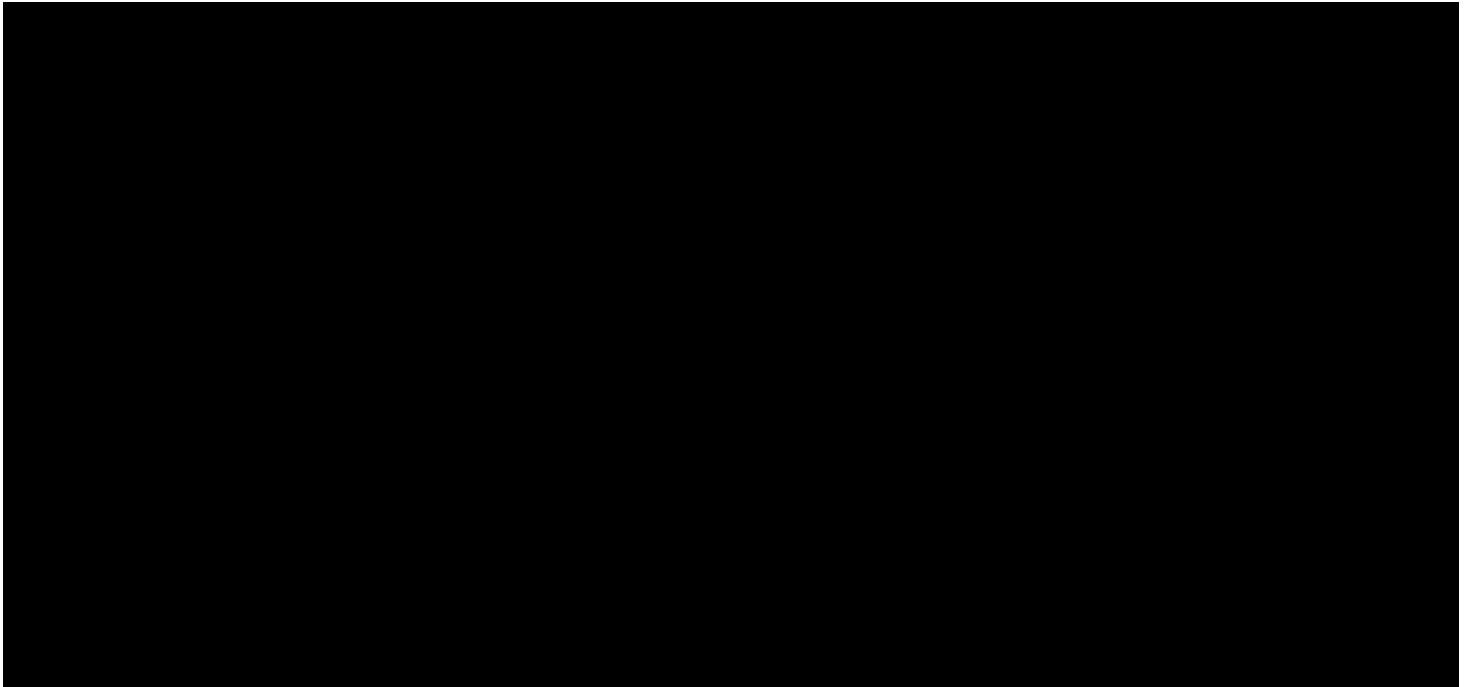
Defined Benefit Pension



Ranking Among Plans in Study	Employer Index	Total Index
1st	████	████
4th	████	████
8th	████	████
12th	████	████
16th	████	██
Your Position Relative to the Base Companies	Employer Value	Total Value
Index	████	████
Ranking	████	████

N-3-2

Defined Benefit Pension



Ranking Among Plans in Study	Employer Index	Total Index
1st	████	████
4th	████	████
8th	████	████
12th	████	████
16th	████	██
Your Position Relative to the Base Companies	Employer Value	Total Value
Index	████	████
Ranking	████	████

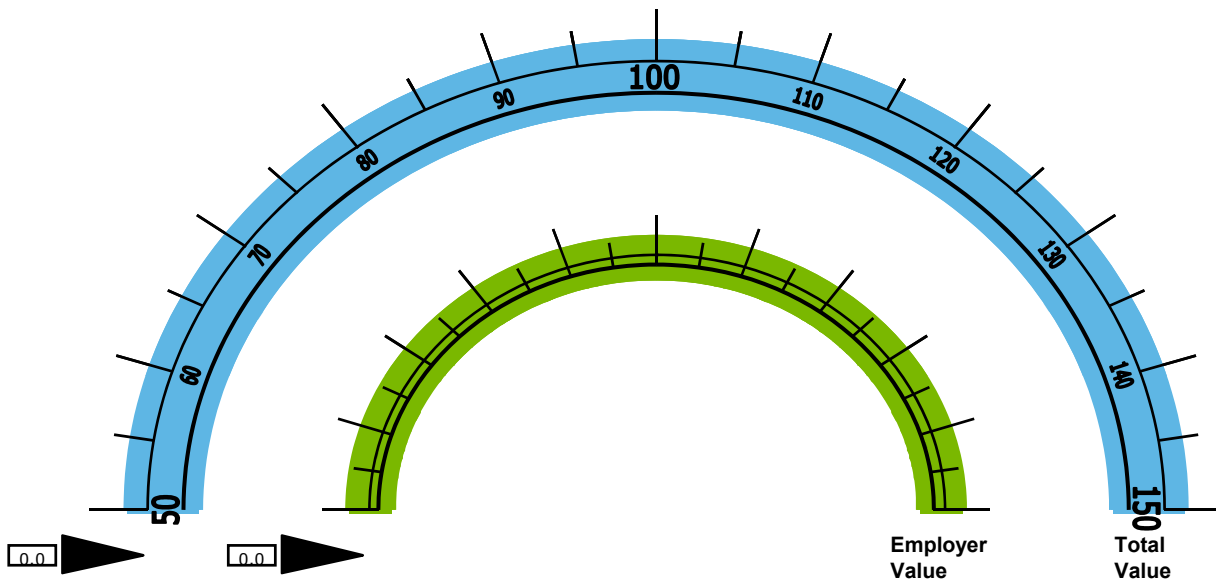
Notes - Defined Contribution

-- EE Contributions -- ----- ER Contributions -----

Organization	Yr.	Type of Plan	Eligibility	Matched %	Matched Contributions	Unmatched Contributions
--------------	-----	--------------	-------------	-----------	-----------------------	-------------------------

Ontario Power	13	--	--	--	--	--
---------------	----	----	----	----	----	----

Defined Contribution



Ranking Among Plans in Study	Employer Index	Total Index
1st	■	■
4th	■	■
8th	■	■
12th	■	■
16th	■	■
Your Position Relative to the Base Companies	Employer Value	Total Value
Index	0.0	0.0
Ranking	■	■

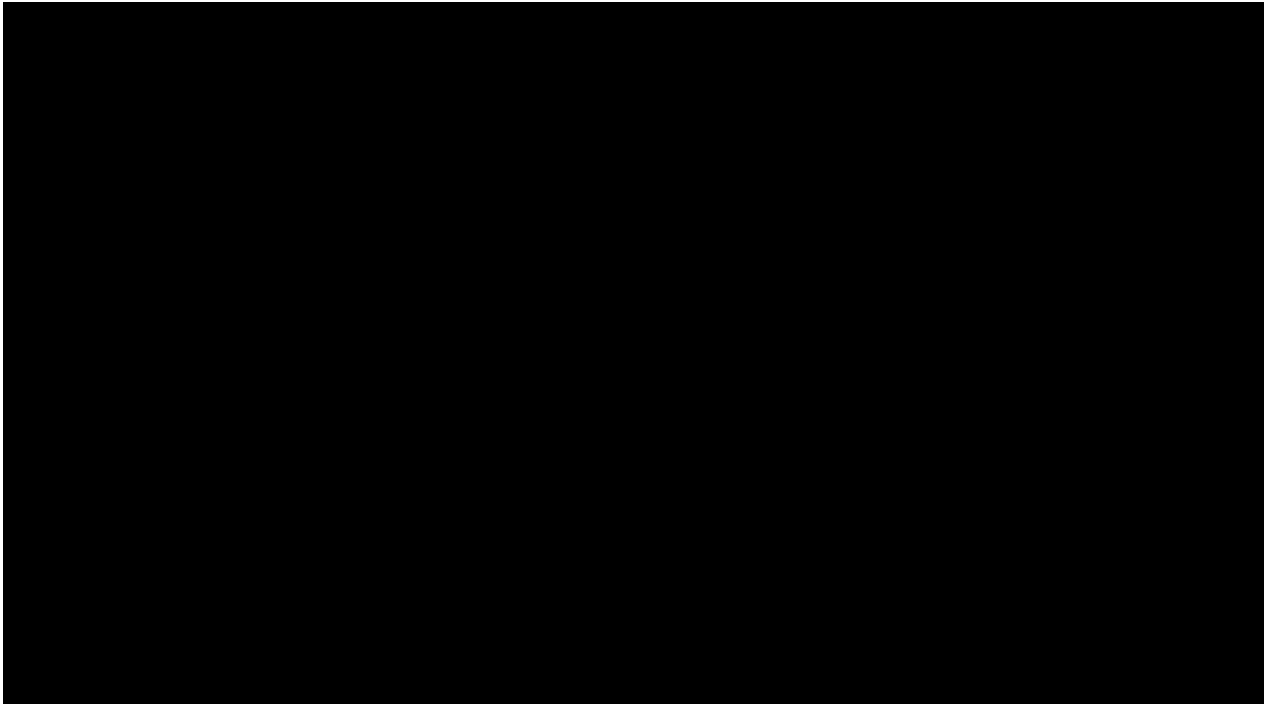


Retirement: Defined Benefit Pension and Employer Defined Contribution

The benefit areas included in this index are:

- Defined Benefit Pension
- Defined Contribution

Defined Benefit Pension and Employer Defined Contribution

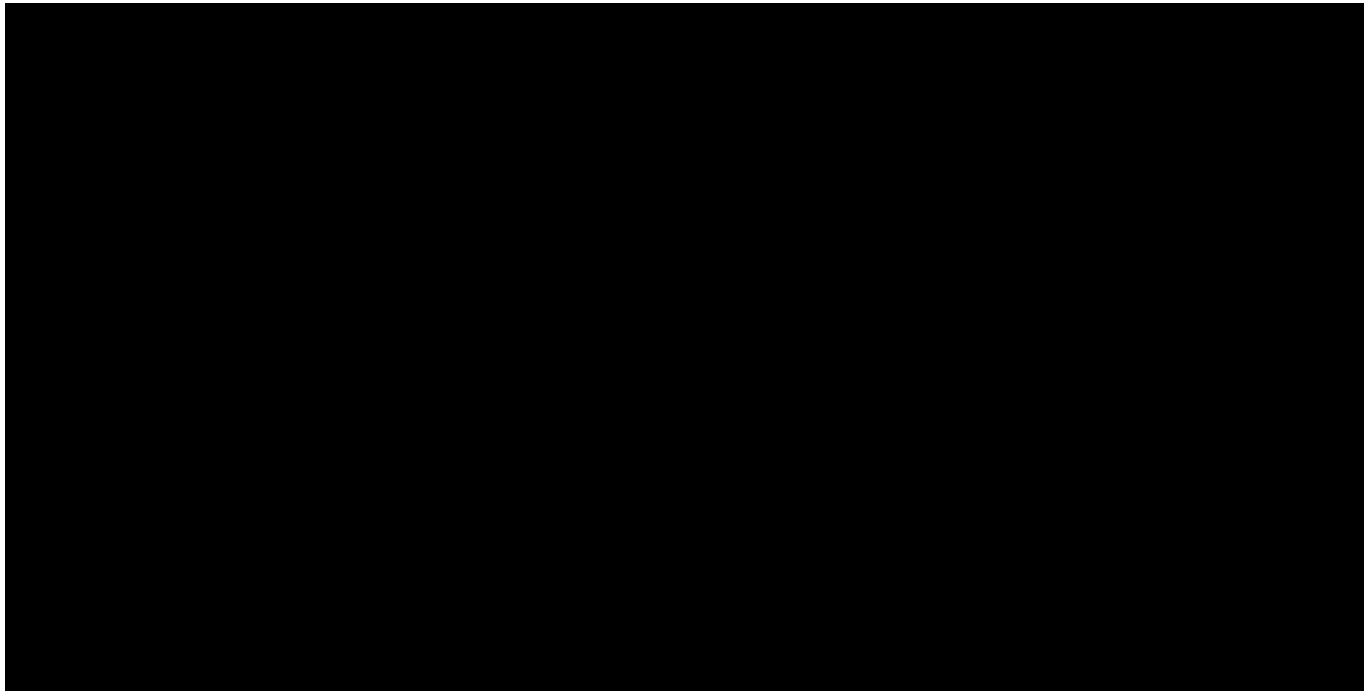


Ranking Among Plans in Study	Employer Index	Total Index
1st	████	████
4th	████	████
8th	████	████
12th	████	████
16th	████	████
Your Position Relative to the Base Companies	Employer Value	Total Value
Index	████	████
Ranking	████	████

[illegible]

N-6-1

Preretirement Death: Group Life (Er-Paid + Contributory)



Ranking Among Plans in Study	Employer Index	Total Index
1st	████	████
4th	████	████
8th	████	████
12th	████	████
16th	████	████
Your Position Relative to the Base Companies	Employer Value	Total Value
Index	████	████
Ranking	████	████

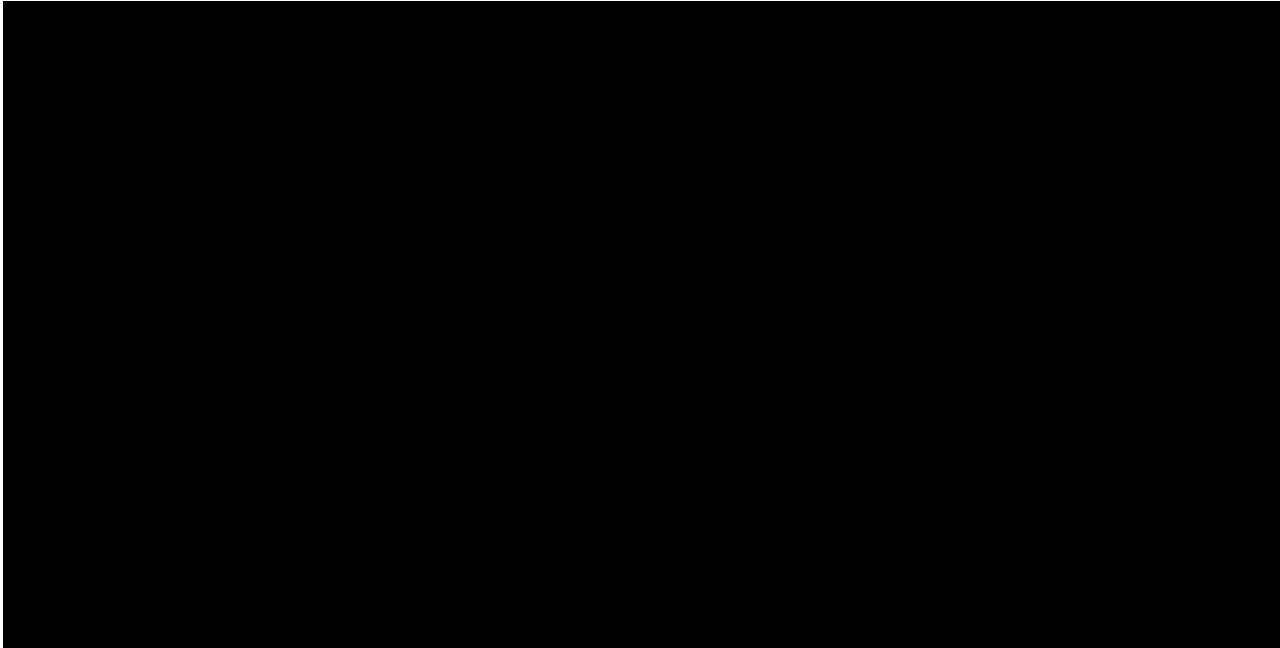
Notes - Preretirement Death - Group Life only

Organization	Yr	Employer-Paid Amount	Contributory Amount	Monthly Employee Contributions per \$1,000
--------------	----	----------------------	---------------------	--

--	--	--	--	--

Ontario Power	13	2.00 x pay; No maximum	1.00 x pay; No maximum	\$0.220
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Preretirement Death: Group Life (Er-Paid + Contributory)



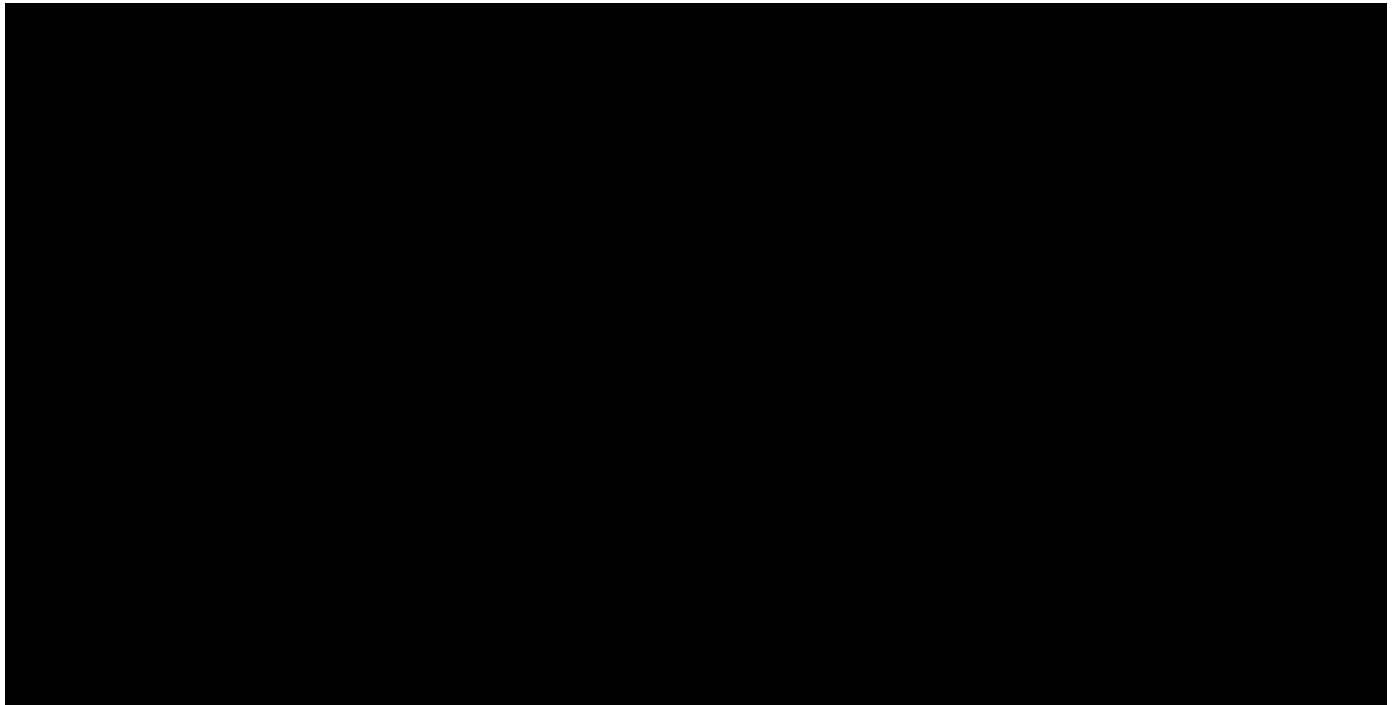
Ranking Among Plans in Study	Employer Index	Total Index
1st	████	████
4th	████	████
8th	████	████
12th	████	████
16th	████	████
Your Position Relative to the Base Companies	Employer Value	Total Value
Index	████	████
Ranking	████	████

Notes - Preretirement Death: Survivors' Benefits

----- Pension-related -----

Organization	Yr	Benefit Amount	Employee Contribution	Benefit Amount
[REDACTED]				
Ontario Power	13	--	--	66.67% of accrued Pre-1987 benefit plus greater of 66.67% of accrued Post-1986 benefit and Commuted value of Post-1986 benefit Commuted value of Post-1986 benefit

All Preretirement Death



Ranking Among Plans in Study	Employer Index	Total Index
1st	████	████
4th	████	████
8th	████	████
12th	████	████
16th	████	████
Your Position Relative to the Base Companies	Employer Value	Total Value
Index	████	████
Ranking	████	████

Notes - Postretirement Death (Continuation of active coverage)

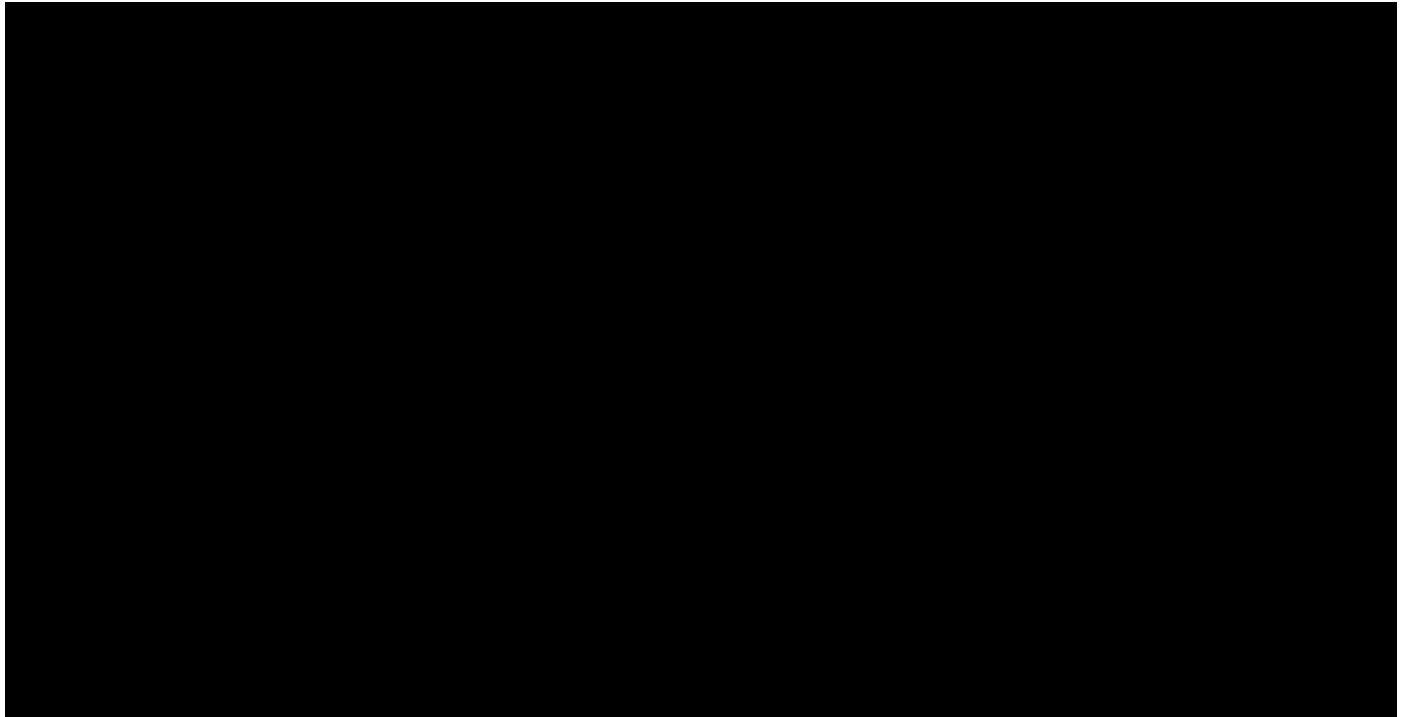
----- Employer-paid -----

----- Contributory -----

Organization	Yr.	Initial Amount	Ultimate Amount	Initial Amount	Ultimate Amount
--------------	-----	----------------	-----------------	----------------	-----------------

[REDACTED]					
Ontario Power	13	0.50 x pay; No maximum	0.25 x pay	--	--

Postretirement Death



Ranking Among Plans in Study	Employer Index	Total Index
1st	████	████
4th	████	████
8th	████	████
12th	████	██
16th	██	██
Your Position Relative to the Base Companies	Employer Value	Total Value
Index	████	████
Ranking	██████	██████

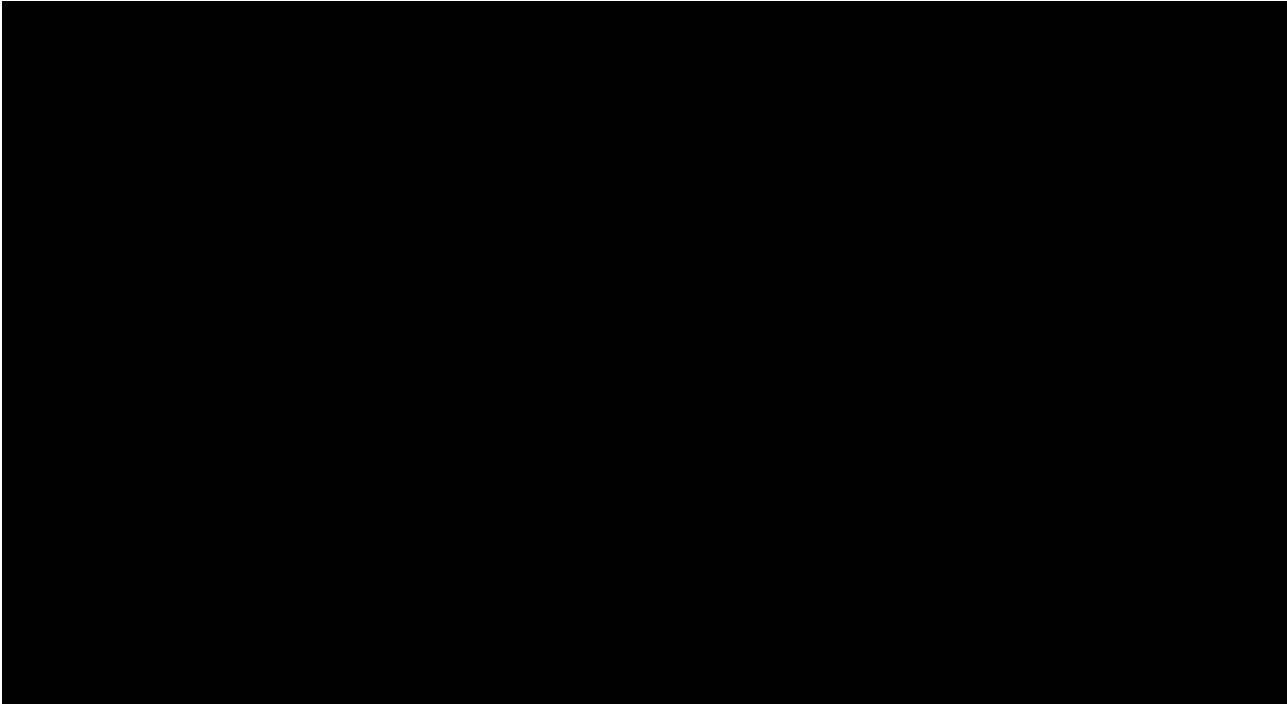


All Death

The benefit areas included in this index are:

- Preretirement Death
 - Group Life
 - Survivors' Income
- Postretirement Death

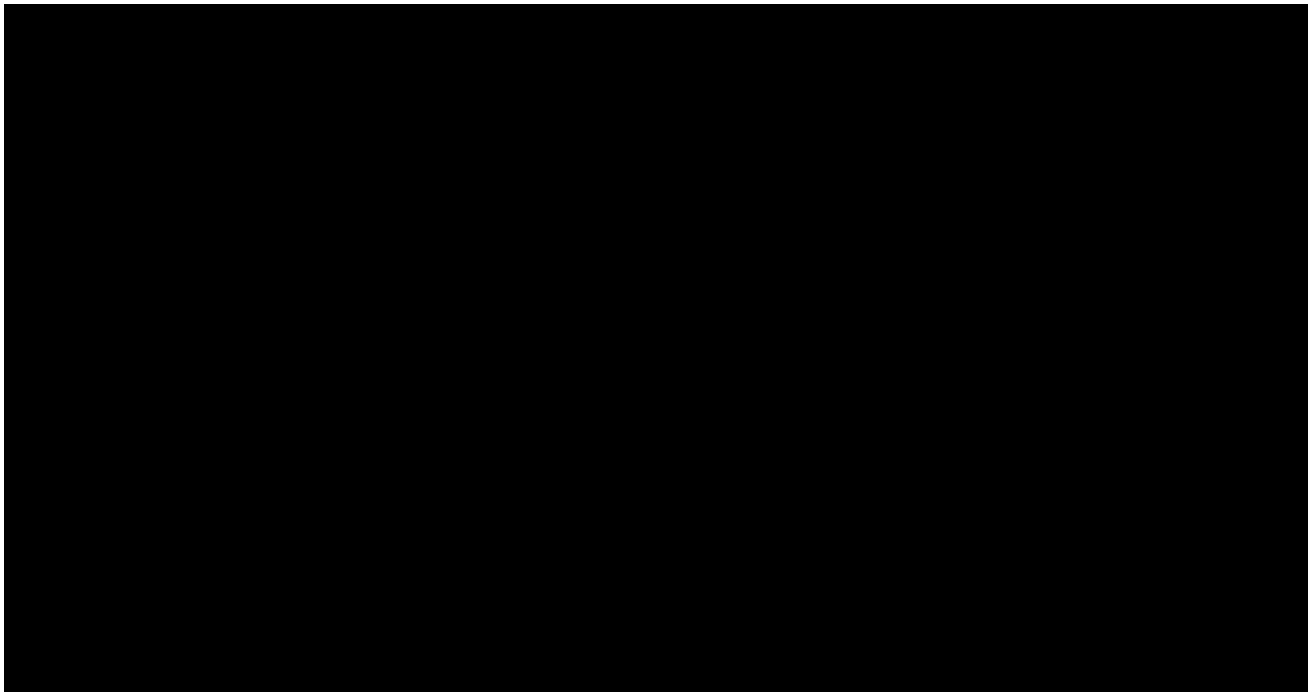
All Death



Ranking Among Plans in Study	Employer Index	Total Index
1st	████	████
4th	████	████
8th	████	████
12th	████	████
16th	████	████
Your Position Relative to the Base Companies	Employer Value	Total Value
Index	████	████
Ranking	████	████

N-10

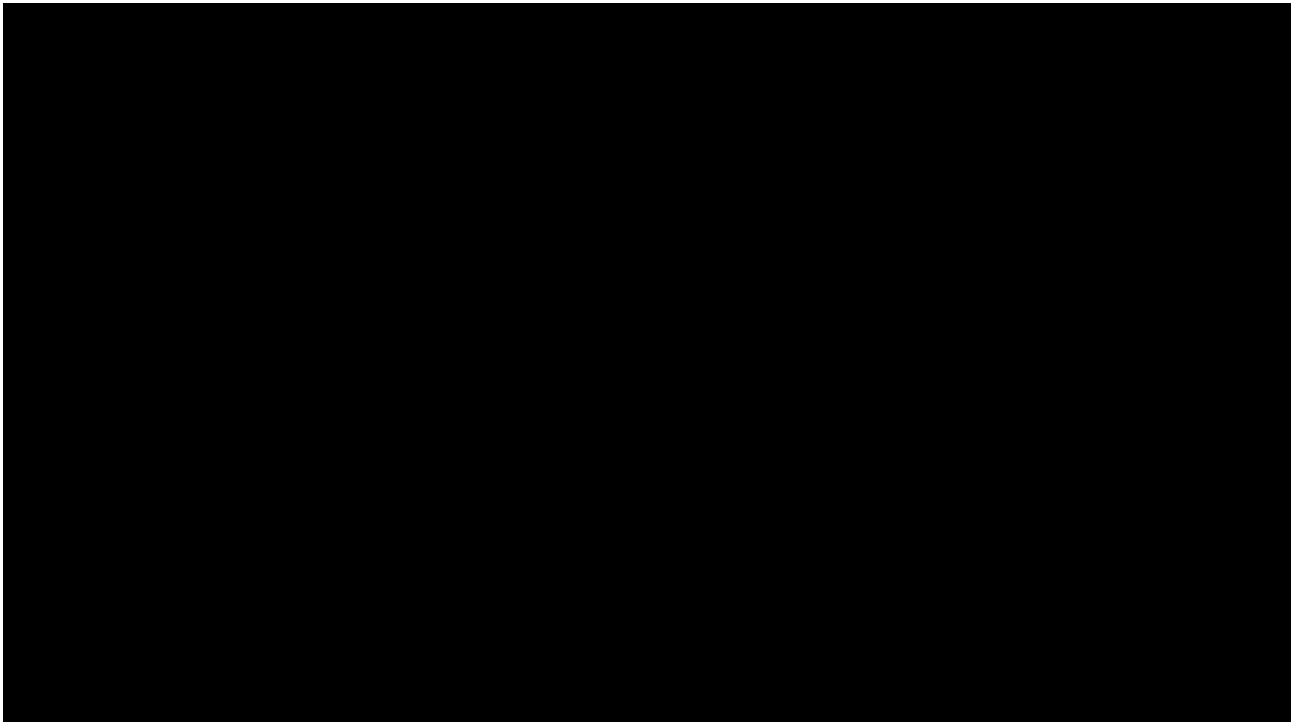
Short-Term Disability



Ranking Among Plans in Study	Employer Index	Total Index
1st	■	■
4th	■	■
8th	■	■
12th	■	■
16th	■	■
Your Position Relative to the Base Companies	Employer Value	Total Value
Index	■	■
Ranking	■	■

Ontario Power	13	Lesser of: 65% (no offset) 75% (employee offset) (taxable)	Employee offset for 75% only	None
---------------	----	---	------------------------------	------

Long-Term Disability



Ranking Among Plans in Study	Employer Index	Total Index
1st	████	████
4th	████	████
8th	████	████
12th	████	████
16th	██	████
Your Position Relative to the Base Companies	Employer Value	Total Value
Index	████	████
Ranking	██████	██████

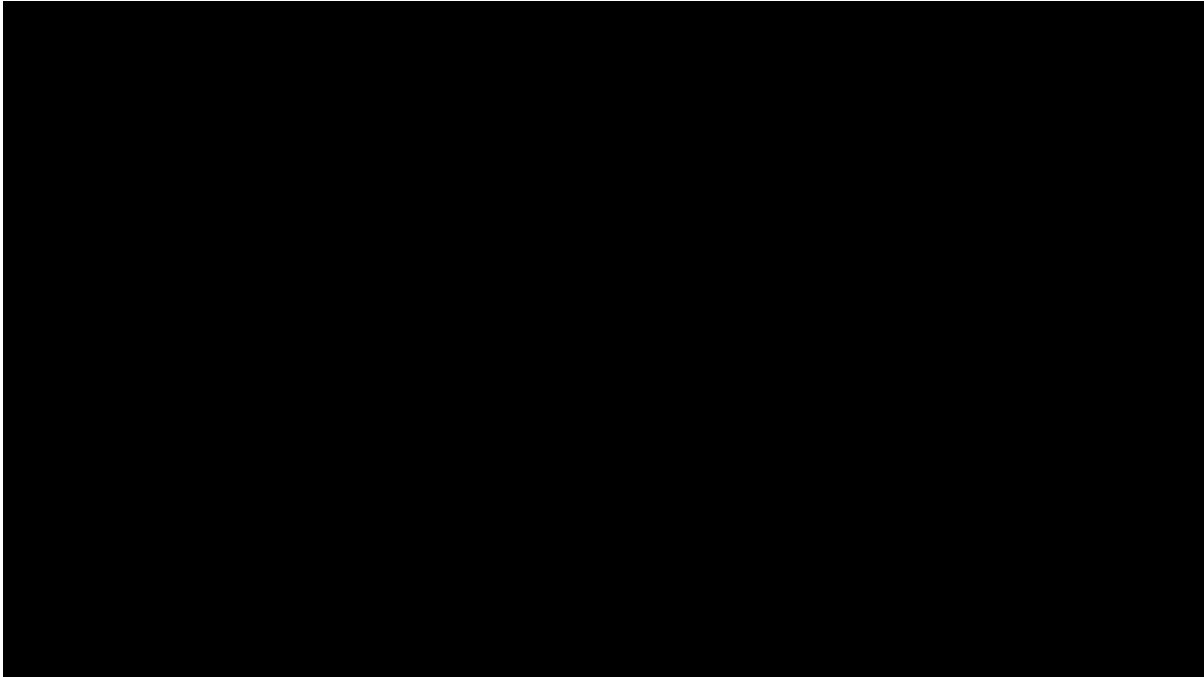


All Disability

The benefit areas included in this index are:

- Short-Term Disability
- Long-Term Disability

All Disability



Ranking Among Plans in Study	Employer Index	Total Index
1st	████	████
4th	████	████
8th	████	████
12th	████	████
16th	████	████
Your Position Relative to the Base Companies	Employer Value	Total Value
Index	████	████
Ranking	██████	██████

Notes - Preretirement Health Care

----- Excess Hospital -----

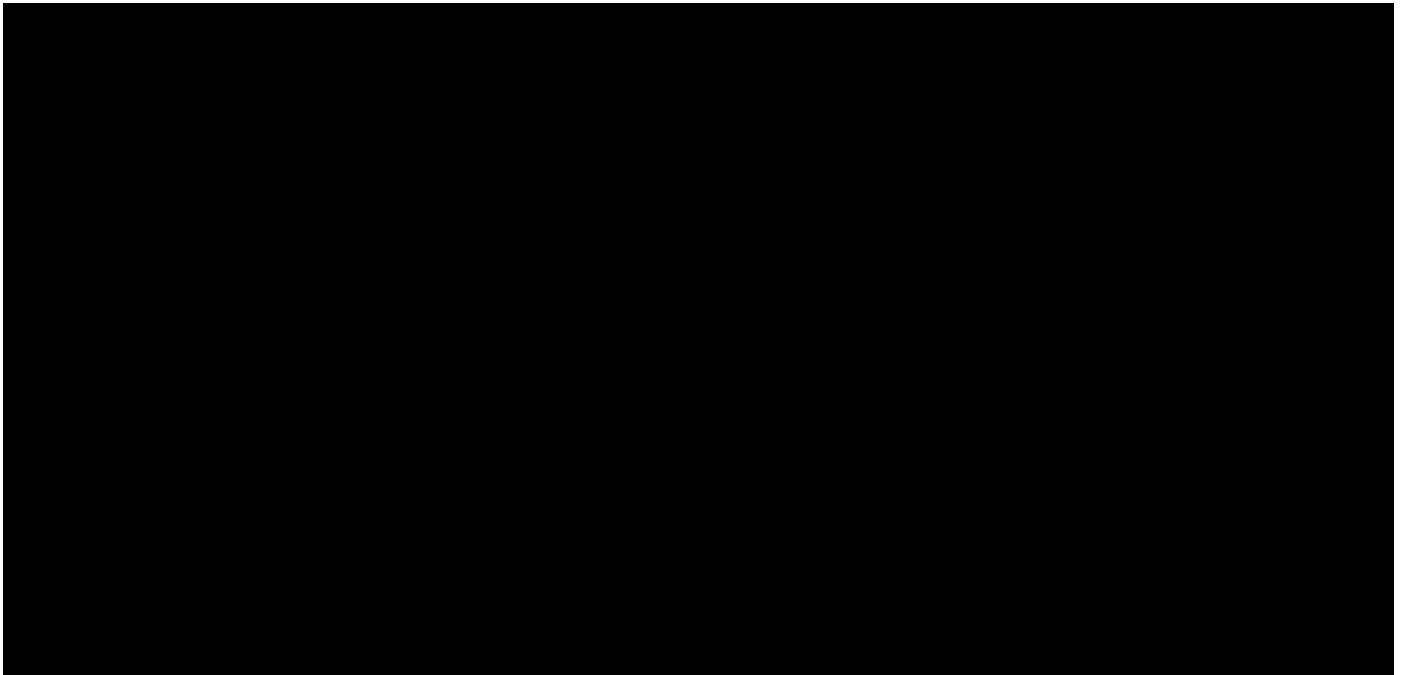
----- Major Medical -----

Organization	Yr	Semi-private	Private	Coinsurance	Deductible	Monthly Employee Contributions
--------------	----	--------------	---------	-------------	------------	--------------------------------

[REDACTED]						
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Ontario Power	13	100%	100%	100%	None	None
---------------	----	------	------	------	------	------

Preretirement Health Care (Including Vision and Hearing)

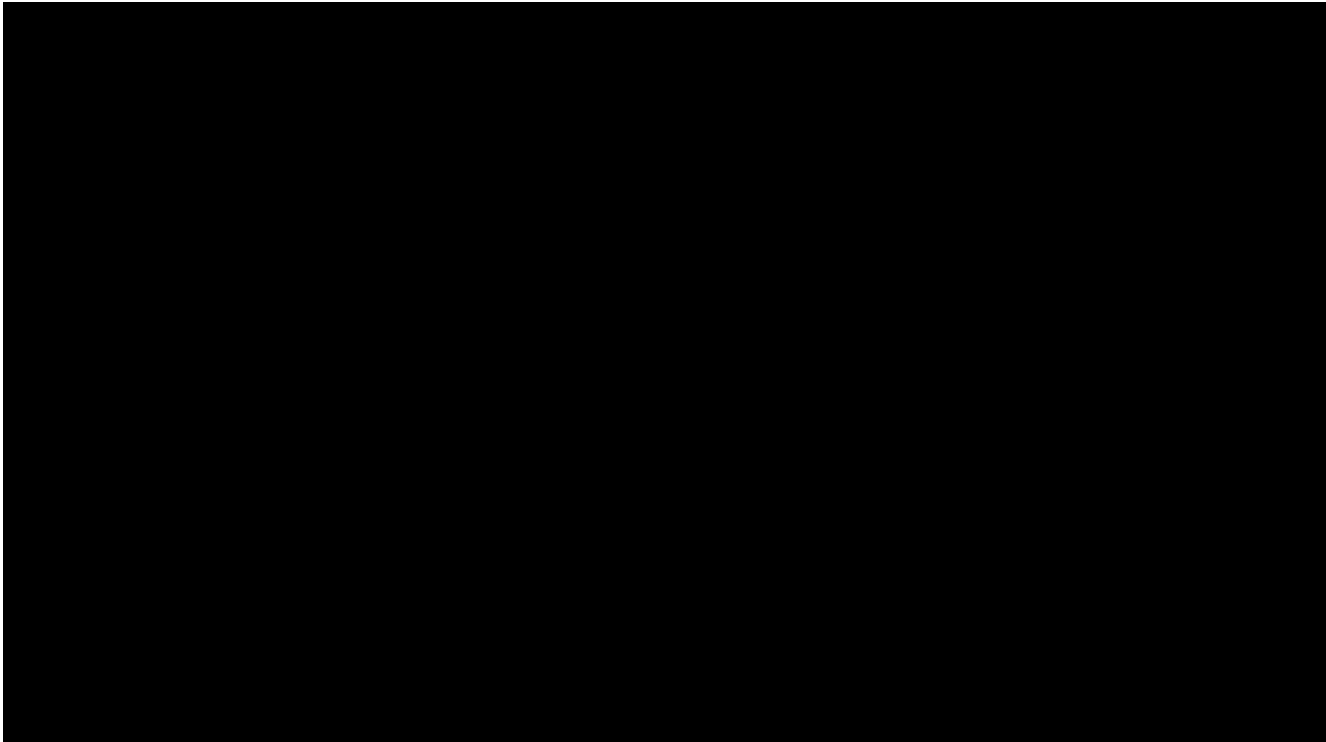


Ranking Among Plans in Study	Employer Index	Total Index
1st	████	████
4th	████	████
8th	████	████
12th	████	████
16th	████	████
Your Position Relative to the Base Companies	Employer Value	Total Value
Index	████	████
Ranking	██████	██████

Organization	Yr Annual Deductible	Coinsurance
--------------	----------------------	-------------

Ontario Power	13	None	100% exams, 100% cleaning, 100% x-rays, 100% fillings, 85% endodontics, 85% periodontics, 85% inlays, 85% crowns, 85% dentures, 85% bridgework	\$4,000	None
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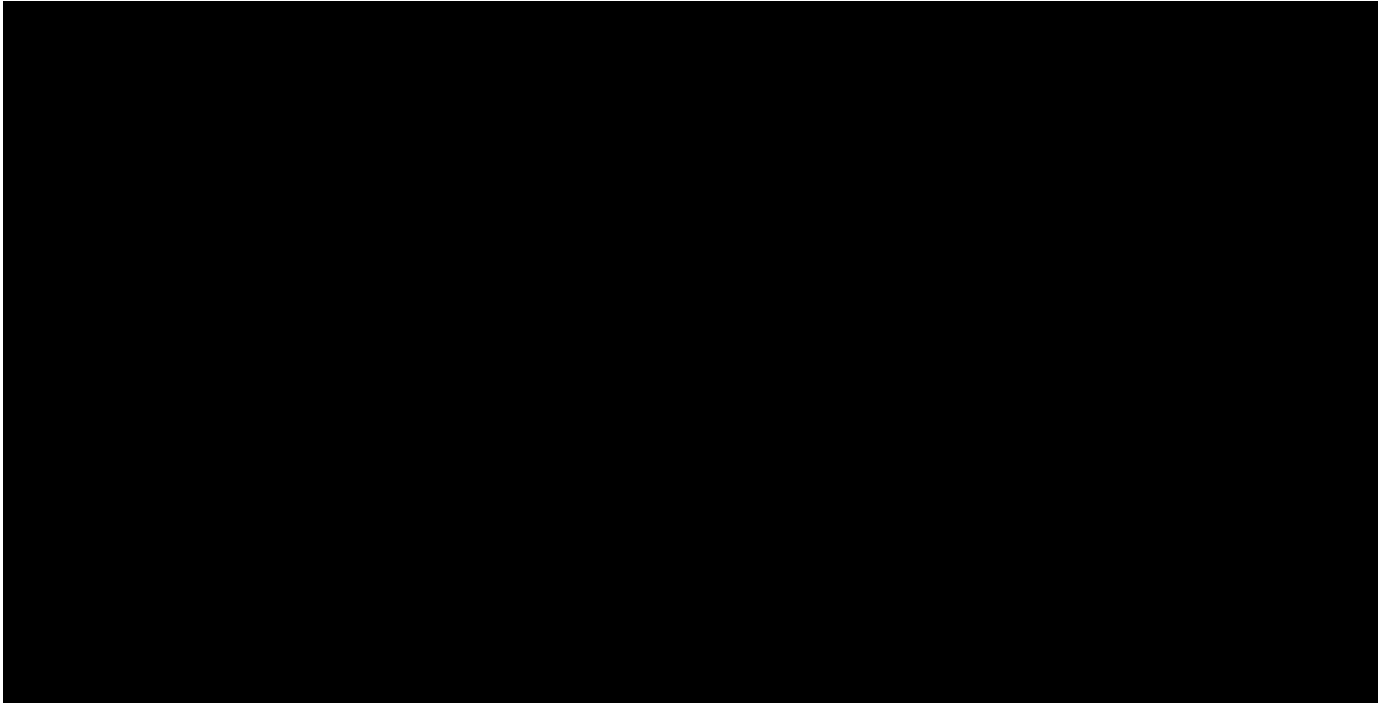
Dental



Ranking Among Plans in Study	Employer Index	Total Index
1st	████	████
4th	████	████
8th	████	████
12th	████	████
16th	██	████
Your Position Relative to the Base Companies	Employer Value	Total Value
Index	████	████
Ranking	████	████

N-14-2

Dental



Ranking Among Plans in Study	Employer Index	Total Index
1st	████	████
4th	████	████
8th	████	████
12th	████	████
16th	██	████
Your Position Relative to the Base Companies	Employer Value	Total Value
Index	████	████
Ranking	████	████

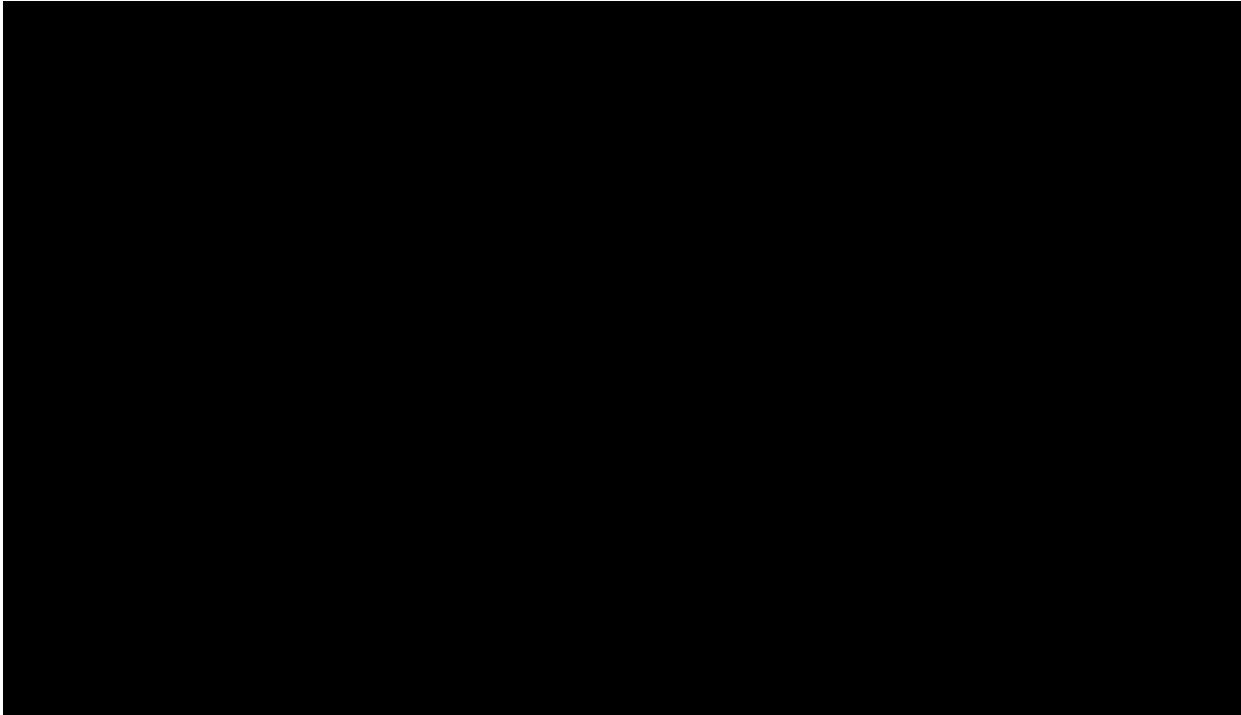


All Preretirement Health Care

The benefit areas included in this index are:

- Preretirement Health Care
 - Medical
 - Dental
 - Vision and Hearing
 - Health Care Savings Accounts
 - Excess Credits

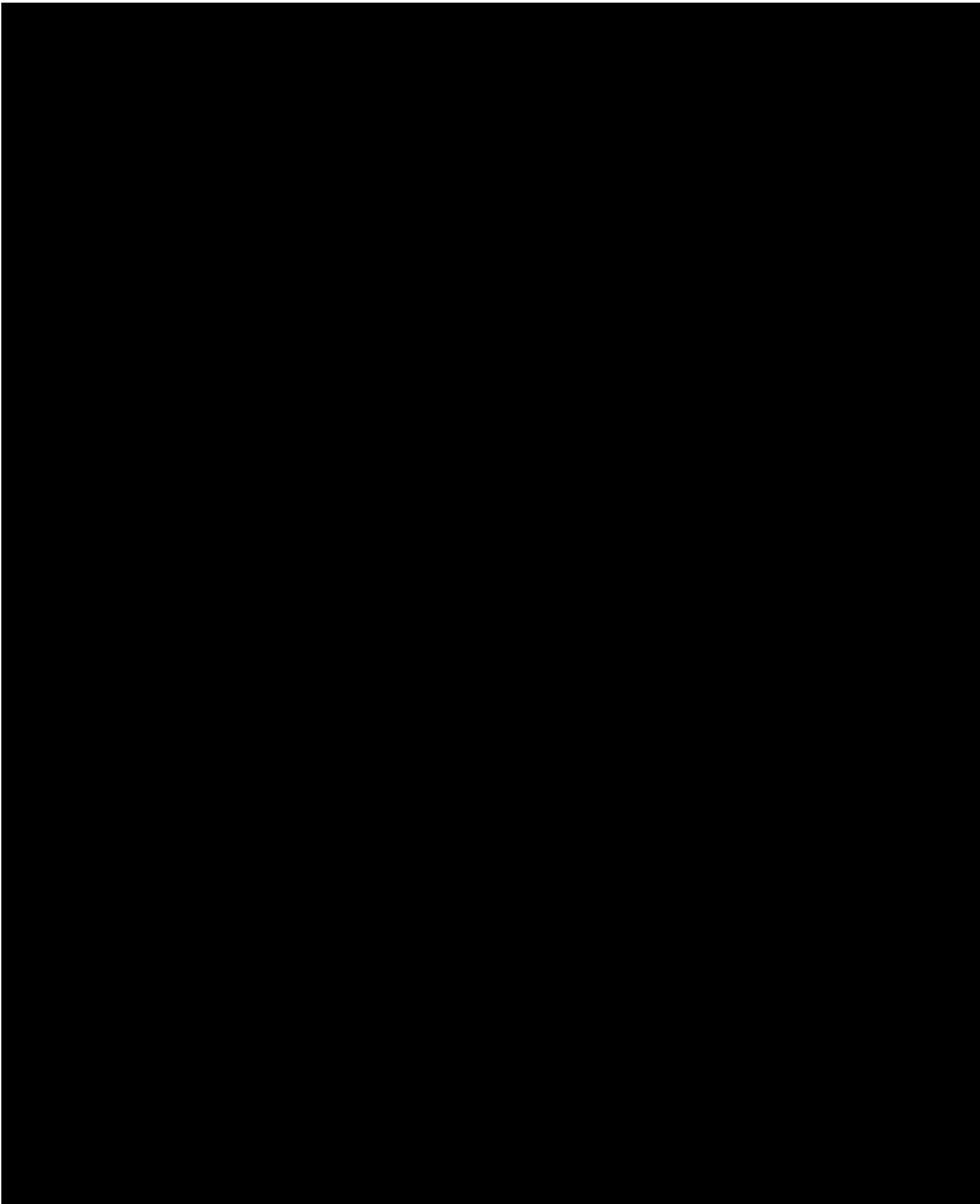
All Preretirement Health Care



Ranking Among Plans in Study	Employer Index	Total Index
1st	████	████
4th	████	████
8th	████	████
12th	████	████
16th	████	████
Your Position Relative to the Base Companies	Employer Value	Total Value
Index	████	████
Ranking	████	████

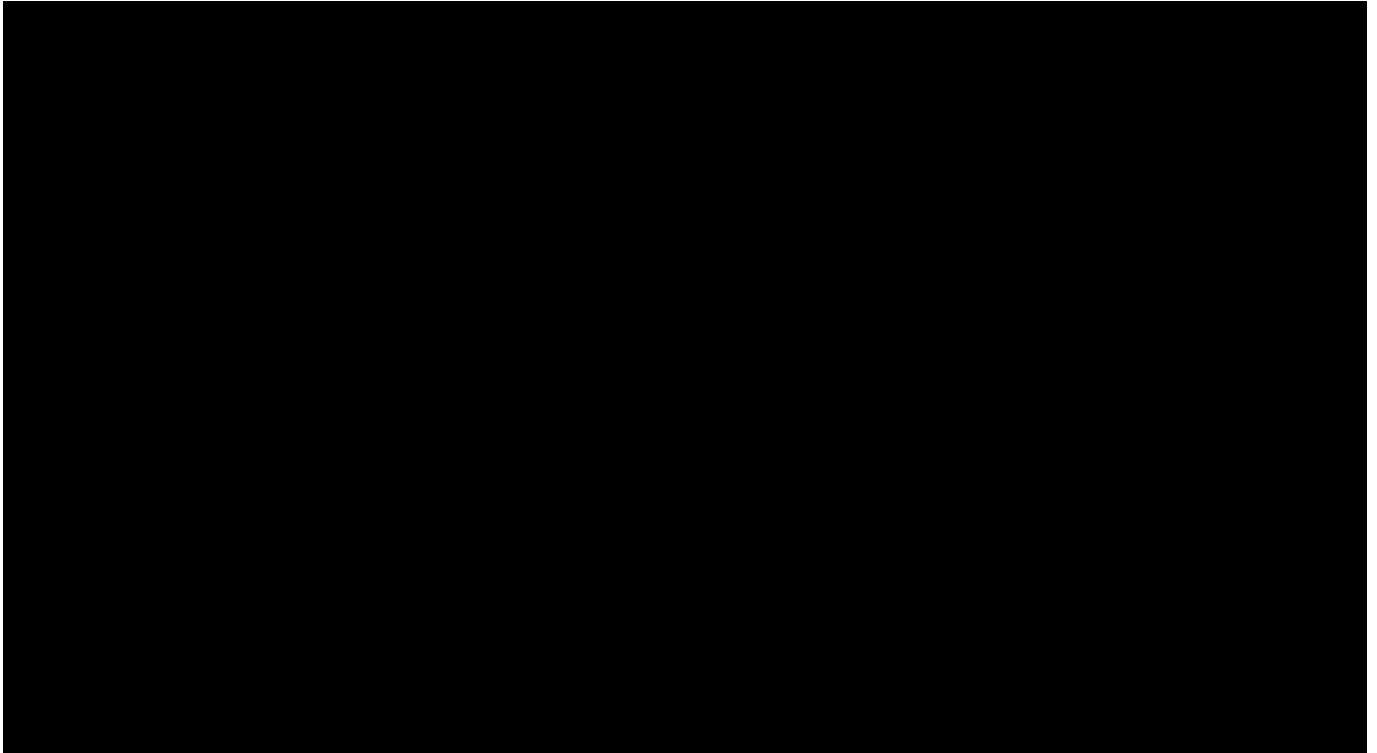
Monthly Retiree

Monthly Retiree



Ontario Power	13	Same as active	None	Same as active	None
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Postretirement Health Care



Ranking Among Plans in Study	Employer Index	Total Index
1st	████	████
4th	████	████
8th	████	████
12th	████	████
16th	██	██
Your Position Relative to the Base Companies	Employer Value	Total Value
Index	████	████
Ranking	██████	██████

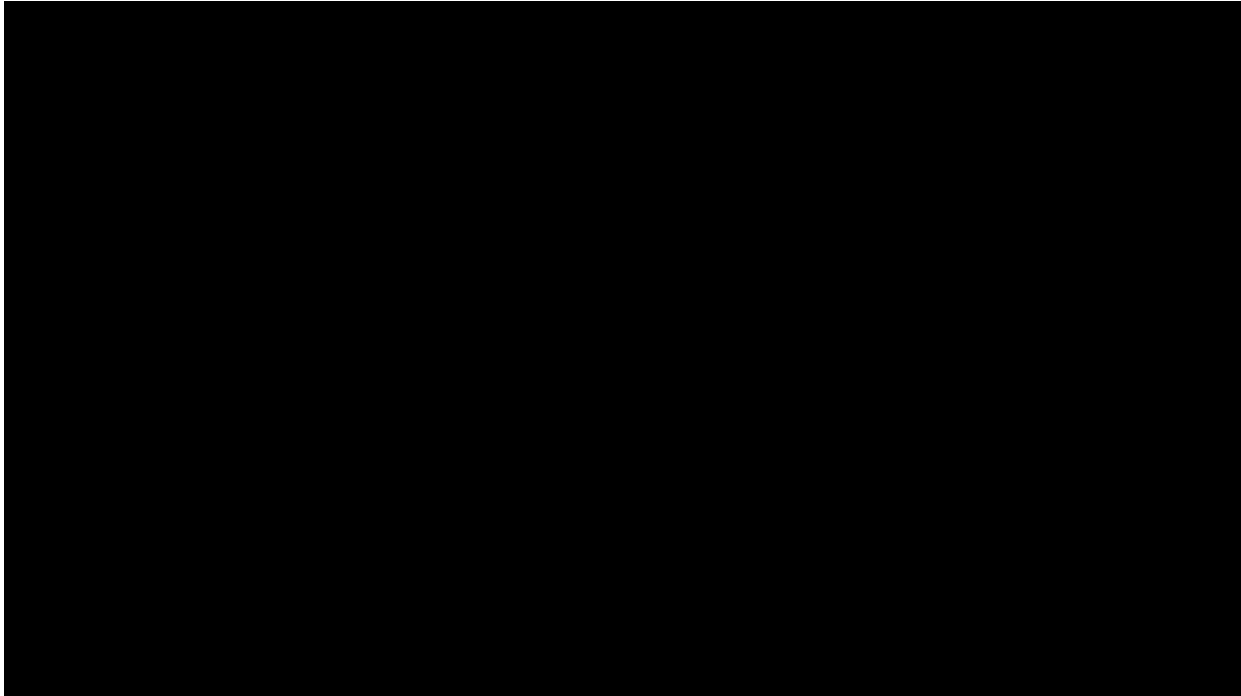


All Health Care

The benefit areas included in this index are:

- Preretirement Health Care
 - Medical
 - Dental
 - Vision and Hearing
 - Health Care Savings Accounts
 - Excess Credits
- Postretirement Health Care
 - Medical
 - Dental
 - Vision and Hearing
 - Health Care Savings Accounts
 - Excess Credits

All Health Care



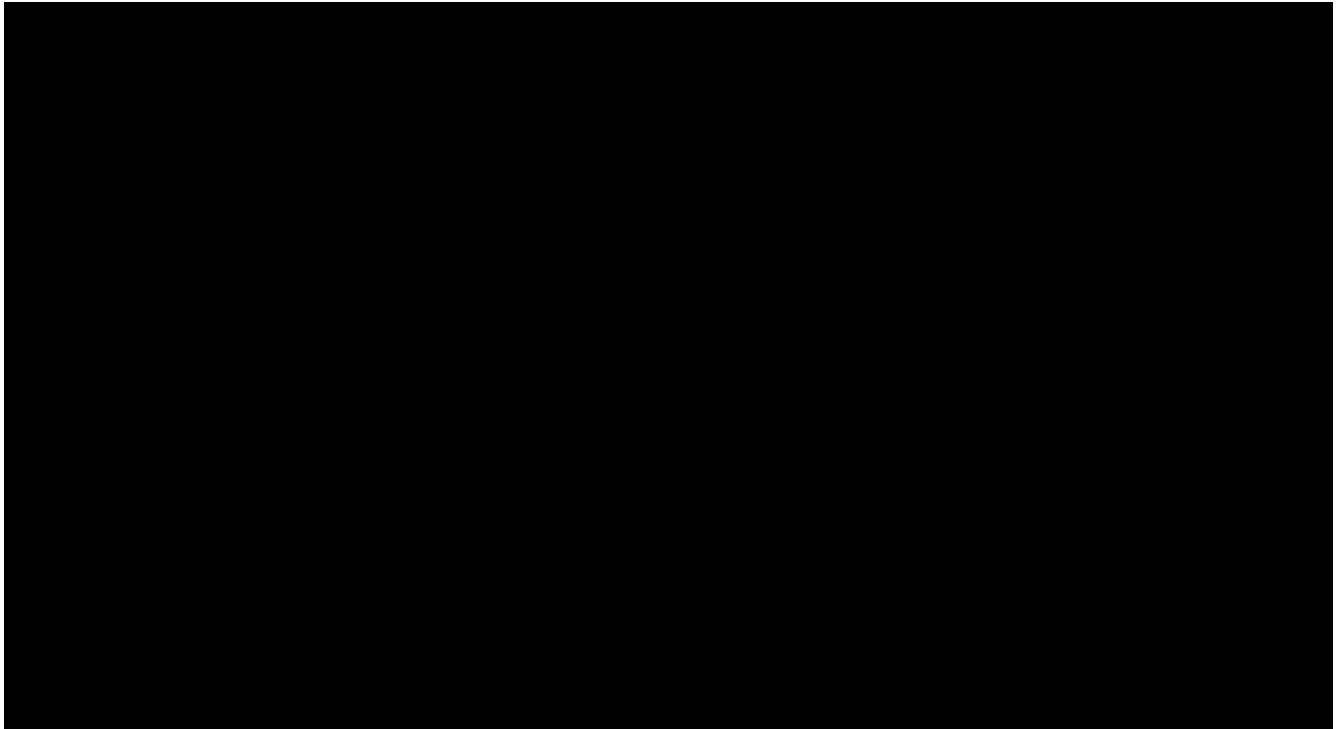
Ranking Among Plans in Study	Employer Index	Total Index
1st	████	████
4th	████	████
8th	████	████
12th	████	████
16th	████	████
Your Position Relative to the Base Companies	Employer Value	Total Value
Index	████	████
Ranking	██████	██████

Notes - Holidays

Organization	Yr. Holidays	Special Provisions
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Ontario Power	13 11.0 + 3.0 floating days	Plus additional 1 day's pay x service over 25 years (maximum 10 days' pay)

Holidays



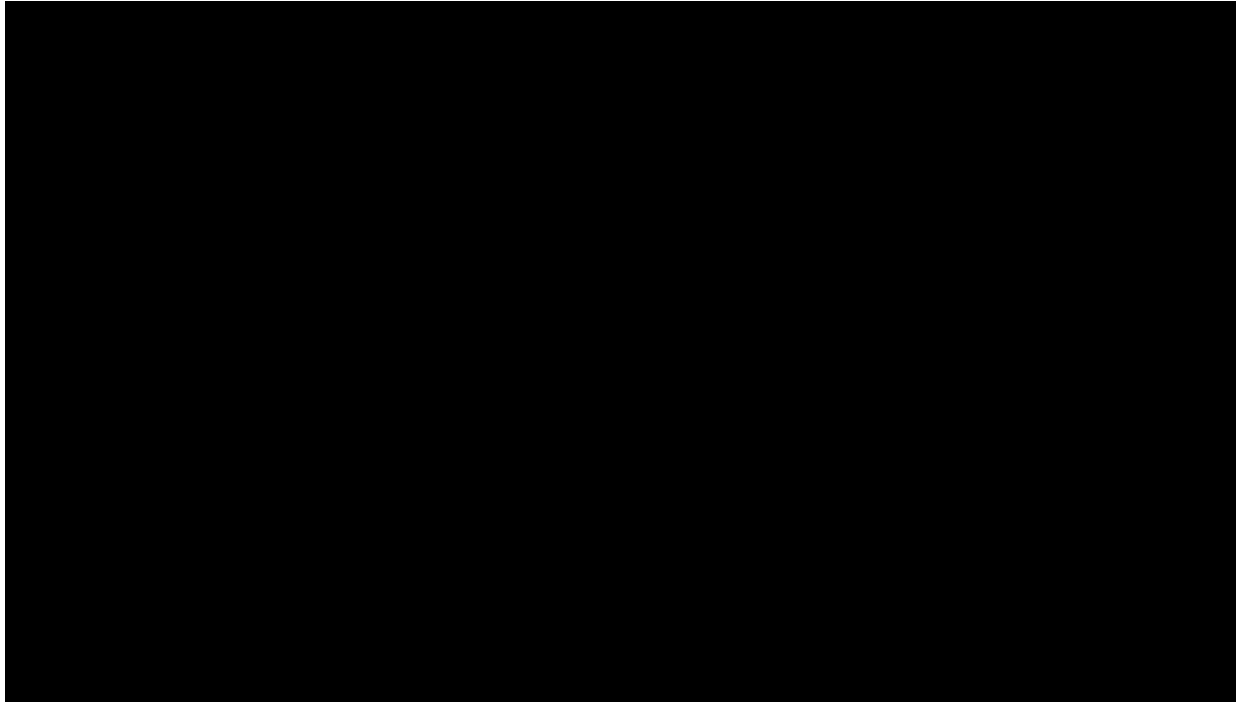
Ranking Among Plans in Study	Employer Index	Total Index
1st	■	■
4th	■	■
8th	■	■
12th	■	■
16th	■	■
Your Position Relative to the Base Companies	Employer Value	Total Value
Index	■	■
Ranking	■	■

Notes - Vacations

----- Vacation by years of service -----

Ontario Power	13	3.0	8.0	16.0	25.0	
---------------	----	-----	-----	------	------	--

Vacations



Ranking Among Plans in Study	Employer Index	Total Index
1st	■	■
4th	■	■
8th	■	■
12th	■	■
16th	■	■
Your Position Relative to the Base Companies	Employer Value	Total Value
Index	■	■
Ranking	■	■

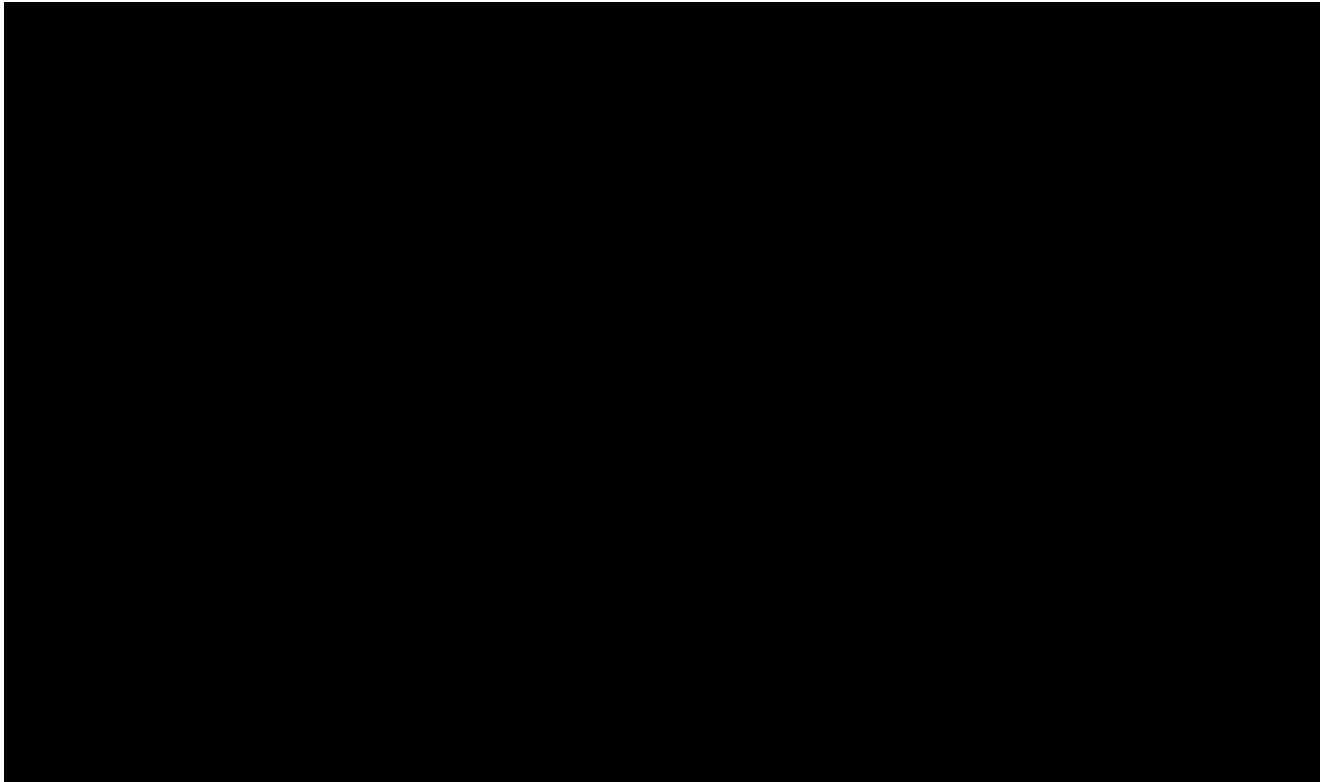
Notes - Time Off With Pay

----- Vacation by Years of Service -----

Organization Yr 3 Weeks 4 Weeks 5 Weeks 6 Weeks 7 Weeks Holidays Special Provisions

Ontario Power	13	3.0	8.0	16.0	25.0		11.0 + 3.0 floating days	Plus additional 1 day's pay x service over 25 years (maximum 10 days' pay)
---------------	----	-----	-----	------	------	--	-----------------------------	---

Time Off With Pay (Holidays, Vacations, Special Provisions)



Ranking Among Plans in Study	Employer Index	Total Index
1st	████	████
4th	████	████
8th	████	████
12th	████	████
16th	████	████
Your Position Relative to the Base Companies	Employer Value	Total Value
Index	████	████
Ranking	██████	██████

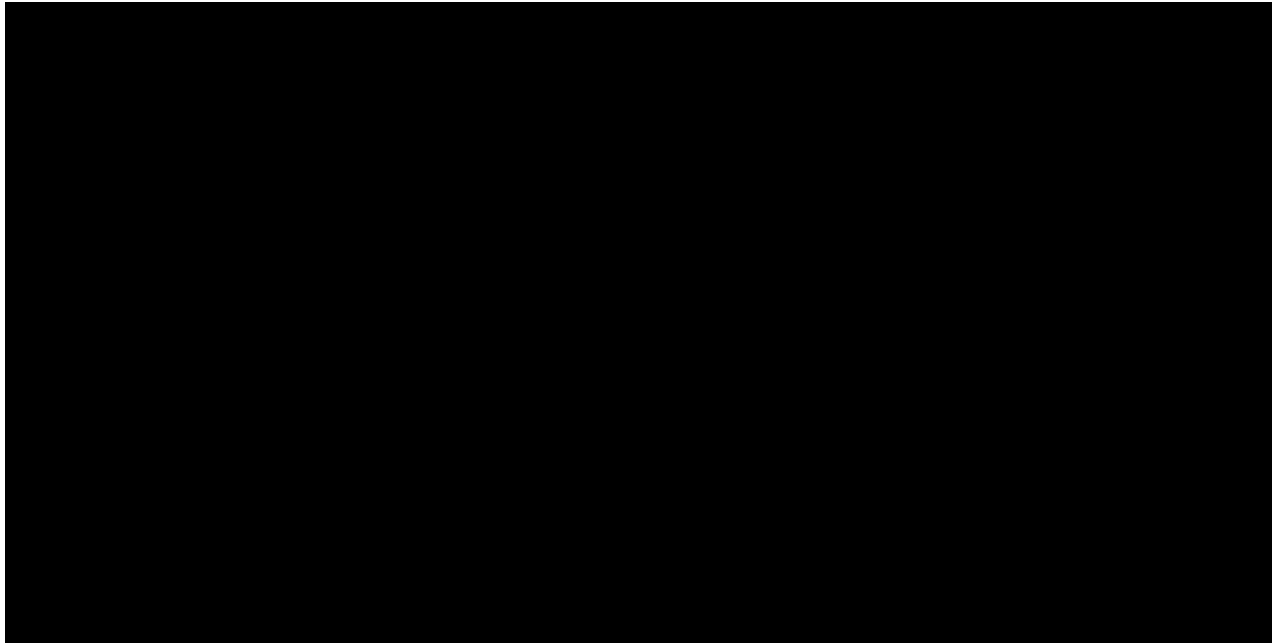


All Postretirement Benefits

The benefit areas included in this index are:

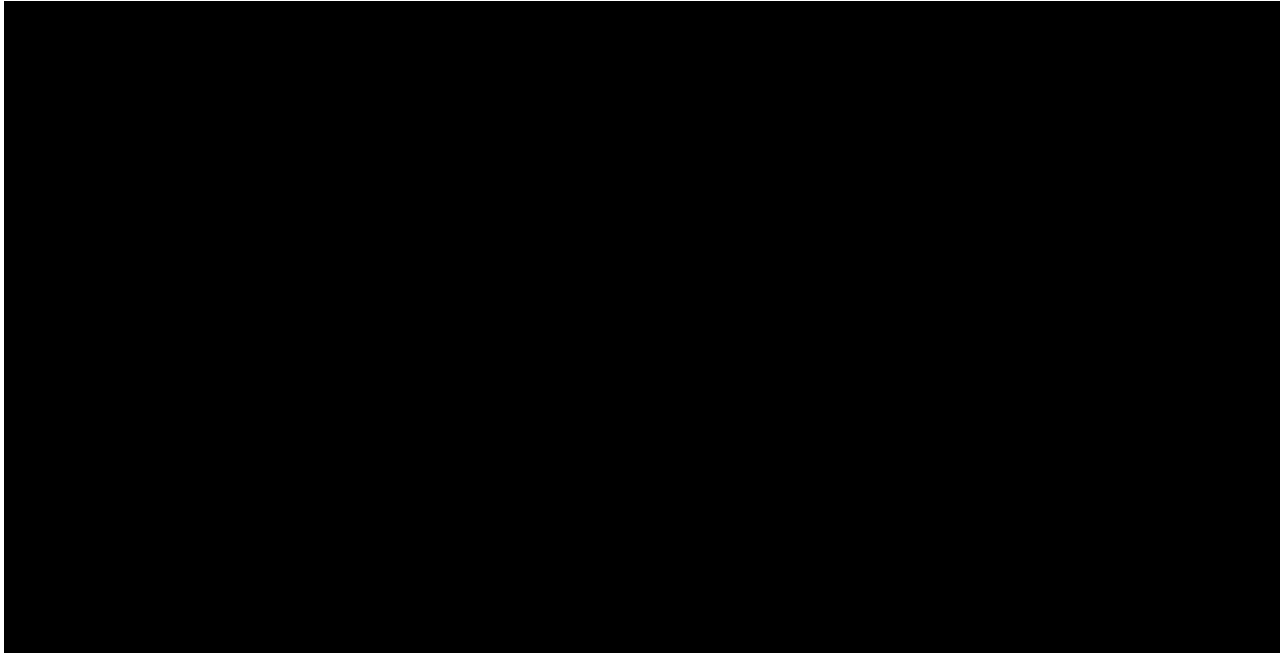
- Defined Benefit Pension
- Defined Contribution
- Postretirement Death
- Postretirement Health Care
 - Medical
 - Dental
 - Vision and Hearing
 - Health Care Savings Accounts
 - Excess Credits

All Postretirement Benefits



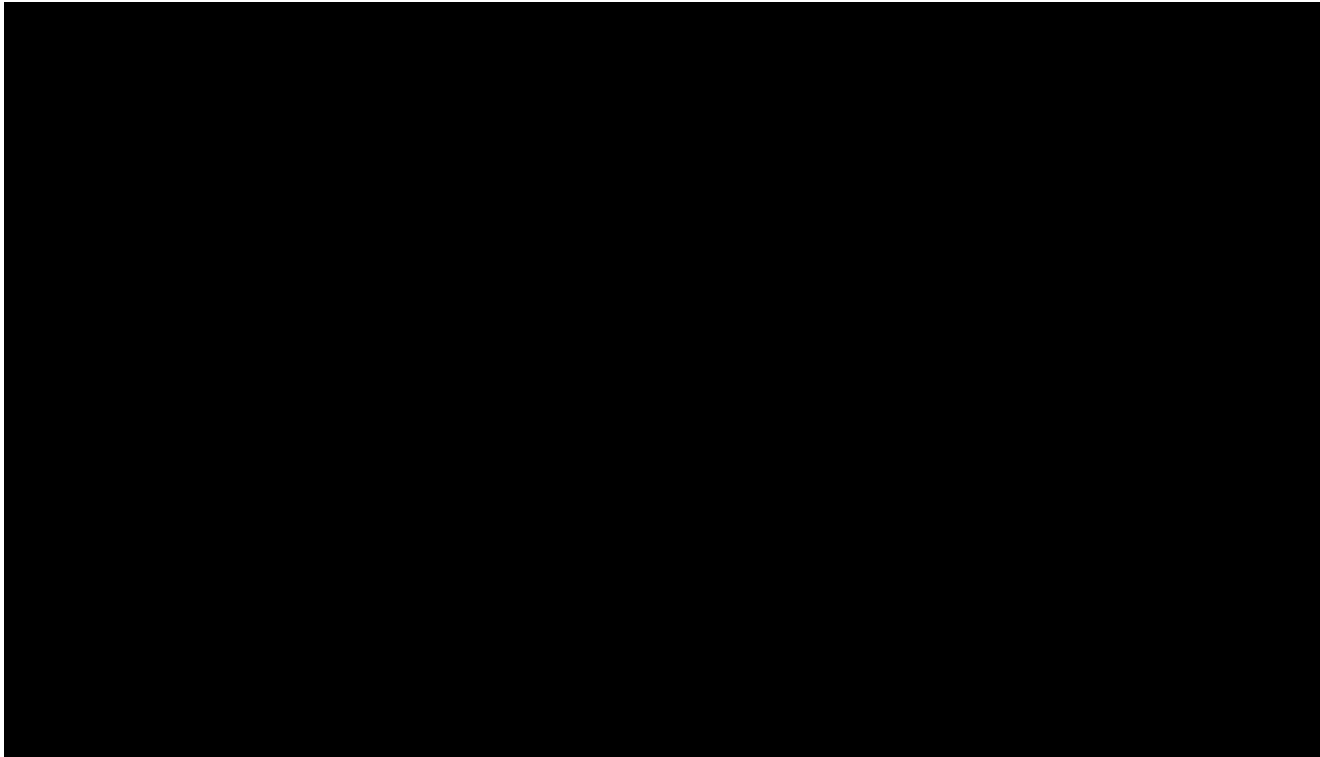
Ranking Among Plans in Study	Employer Index	Total Index
1st	████	████
4th	████	████
8th	████	████
12th	████	████
16th	████	████
Your Position Relative to the Base Companies	Employer Value	Total Value
Index	████	████
Ranking	██████	██████

All Preretirement Group Benefits



Ranking Among Plans in Study	Employer Index	Total Index
1st	████	████
4th	████	████
8th	████	████
12th	████	████
16th	████	████
Your Position Relative to the Base Companies	Employer Value	Total Value
Index	████	████
Ranking	████	████

Overall Results



Your Position Relative to the Base Companies		Employer Value		Total Value	
		Index	Ranking	Index	Ranking
All Benefits	(A)	111.1	2nd / 3rd	110.9	2nd / 3rd
Defined Benefit	(P)	████	████	████	████
Defined Contribution	(C)	0.0	████	0.0	████
All Death	(De)	████	████	████	████
All Disability	(Di)	████	████	████	████
All Health Care	(H)	████	████	████	████
Time Off With Pay	(T)	████	████	████	████

Comments



General Comments

Base Companies

In this study, the value of the Ontario Power Generation (“OPG”) salaried employee benefits program for the PWU group is compared to a norm of the values of the salaried employee benefits programs of 16 base companies.

The results suggest that the 16 companies provide a reasonable norm. Within individual benefit areas and in total, the 16 companies’ benefit values are spread fairly evenly over the range from highest to lowest. There is little similarity or grouping evident from the indexes or from the benefit specifications themselves. No one company or group of companies dominates the index.

Benefit Areas

There are five major benefit areas—retirement (defined benefit pension and defined contribution), death, disability, health care, and time off with pay. Of these areas, retirement, health care, and time off with pay are major value areas within the context of the overall benefits program; death and disability typically account for a less significant portion of the value of the overall benefits program.

Contributory Plans

For each benefit area, two comparisons are presented—the “total” value index and the “employer-paid” value index. The total value index reflects the value of all available benefits taking into consideration anticipated participation in optional programs. The employer-paid value index is based on the excess of the total value of benefits over the value of employee contributions.

Base Company Results

The base company indexes show the widest variation in the retirement and health care areas. The spread in values typically occurs throughout the range and is not just the result of one high or one low company. There is often a greater percentage variation in a sub-area, such as postretirement health care.



Composite Indexes

Several composite indexes have been created to facilitate the benefit value comparisons. The first major composite index is the All Benefits index, which compares the value associated with all benefits—retirement, death, disability, health care, and time off with pay.

The next major composite index is the All Security Benefits index, which compares the values of the overall benefits programs excluding time off with pay. The All Security Benefits index enables a comparison of “hard dollar” benefits by excluding only the value of holidays and vacations.

Supplementing the All Benefits index are two special indexes. The All Postretirement Benefits index includes values for postretirement death, postretirement health care, and the retirement portion of defined benefit and defined contribution plans. This is a comparison of benefits available to employees after retirement.

The All Preretirement Group Benefits index includes values for group life and survivor income insurance, short-term disability, long-term disability, and health care benefits provided to active employees. The relationship between this index and the All Postretirement Benefits index also allows a comparison of the relative level of benefits, versus the base companies, for retirees and active employees.



Comments on Overall Results

Competitive Position

	Employer-Paid Value		Total Value	
	Index	Ranking	Index	Ranking
All Benefits	111.1	2nd / 3rd	110.9	2nd / 3rd
All Security Benefits				

Ontario Power Generation

The above average total All Benefits index at OPG

Use of Employee Contributions



Distribution of Overall Results

The following tables and graphs show how your values for each major benefit area impact your overall results (i.e., the All Benefits index). For example, the employer-paid All Benefits index is 11.1 percentage points above average and defined pension benefits contribute ████████ to this All Benefits position. In each benefit area, the Impact on All Benefits is calculated as the Relative Weight multiplied by the difference between Your Index and 100.

Employer-Paid Value	Relative Weight	Your Index	Impact on All Benefits
Retirement			
Defined Benefit	██████	██████	██████
Defined Contribution	██████	0.0	██████
Death			
Preretirement	██████	██████	██████
Postretirement	██████	██████	██████
Disability	██████	██████	██████
Health Care			
Preretirement	██████	██████	██████
Postretirement	██████	██████	██████
Time Off With Pay	██████	██████	██████
All Benefits	100.0%	111.1	11.1

Total Value	Relative Weight	Your Index	Impact on All Benefits
Retirement			
Defined Benefit	██████	██████	██████
Defined Contribution	██████	0.0	██████
Death			
Preretirement	██████	██████	██████
Postretirement	██████	██████	██████
Disability	██████	██████	██████
Health Care			
Preretirement	██████	██████	██████
Postretirement	██████	██████	██████
Time Off With Pay	██████	██████	██████
All Benefits	100.0%	110.9	10.9



Comments—Retirement

Competitive Position

	Employer-Paid Value		Total Value	
	Index	Ranking	Index	Ranking
Defined Benefit Pension	████	████	████	████
Defined Contribution	0.0	████	0.0	████
All Retirement	████	████	████	████

Overall Retirement Program

Prevalence

The following table shows the different combinations of defined benefit pension plans and defined contribution plans among the base companies.

	Number of Base Companies
Defined benefit plan only; no defined contribution plan	13/16
Defined benefit plan only for a grandfathered group of employees; defined contribution plan for all new employees	0/16
Defined contribution plan for all employees; no defined benefit plan	0/16
Defined benefit plan and defined contribution plan ¹	3/16

The comments that follow do not reflect the base companies that have a defined benefit plan only for a grandfathered group of employees.

¹ Includes situations where employees have a choice between a defined benefit plan and a defined contribution plan



Flexibility

The following table shows how many base companies have some flexibility for employees in their retirement program.

	Number of Plans
Choice between defined benefit pension plan and defined contribution plan	2/16
Flexibility in defined benefit plan	
Choice between non-contributory and contributory benefits	0/16
Choice of two or more options	0/16
Optional contributions to enhance ancillary benefits	1/16

For base companies that offer a choice between a defined benefit plan and a defined contribution plan, we have assumed that employees under age 45 would participate in the defined contribution plan and that employees over age 45 would participate in the defined benefit plan. As a result, the total retirement program value for these companies is split between the Defined Benefit Pension and Defined Contribution benefit areas.

Similarly, for the base company that provides a hybrid Defined Benefit/Defined Contribution plan, the total retirement value is split between the two benefit areas.

Defined Benefit Pension

The primary drivers of value are the type of plan (highest average pay plans are generally more valuable than career average pay plans), the inclusion of bonus in the pay definition, the level of normal retirement benefits, the normal form of payment, and the extent of any early retirement subsidies.

Base Company Practices

For base companies that offer a choice between a defined benefit plan and a defined contribution plan, the comments that follow reflect the defined benefit plan.

Type of Plan

	Number of Plans	
Highest average pay plan		16/16
Five-year average	13/16	
Three-year average	3/16	
Other	0/16	
Career average pay plan		0/16



Inclusion of Bonus² in Pay Definition

	Number of Plans
Bonus not included	6/16
Bonus included	10/16

Inclusion of Automatic Indexing

	Number of Plans
Indexing not included	2/16
Indexing included	13/16
Ad hoc indexing	1/16

Normal Retirement Benefit

The “average” base company defined benefit plan (for those companies with a plan) provides a normal retirement benefit of [REDACTED] of pay up to the YMPE plus [REDACTED] of pay above the YMPE.

Normal Form of Payment

	Number of Plans	
Life annuity		1/16
Life annuity with 5-year guarantee		1/16
Life annuity with 10-year guarantee		2/16
Partially subsidized joint and survivor annuity		0/16
Life annuity if single	0/0	
Life annuity with guarantee if single	0/0	
Fully subsidized joint and survivor annuity		12/16
Life annuity if single	9/12	
Life annuity with guarantee if single	3/12	

Early Retirement Subsidies

Earliest Unreduced Retirement Age	Number of Plans		
	With 10 Years of Service	With 20 Years of Service	With 30 Years of Service
Age 55	0/16	0/16	13/16
Age 58	0/16	0/16	0/16
Age 60	7/16	9/16	1/16
Age 62	1/16	1/16	0/16
Age 65	8/16	6/16	2/16

² Performance-based supplemental compensation; sales incentives, commissions, and overtime are not considered bonuses for this study.



Average Early Retirement Reduction	With 10 Years of Service	With 20 Years of Service	With 30 Years of Service
Age 55	35.4%	29.0%	9.1%
Age 58	21.4%	17.3%	6.1%
Age 60	12.1%	8.0%	2.5%
Age 62	7.1%	4.6%	1.5%

Employee Contributions

	Number of Plans
Not permitted	2/16
Optional (to enhance ancillary benefits)	1/16
Required for all	13/16

Ontario Power Generation

OPG's total index is [REDACTED]. All base companies provide a defined benefit pension plan to new participants.

As noted previously, for base companies that offer a choice between a defined benefit plan and a defined contribution plan, we have split the retirement program value between the Defined Benefit Pension and Defined Contribution benefit areas by assuming that employees under age 45 would participate in the defined contribution plan and that employees over age 45 would participate in the defined benefit plan. Similarly, one of the base companies provides a hybrid Defined Benefit/Defined Contribution plan, with the values split between these two benefit areas. As a result, it might be misleading to focus on just the Defined Benefit Pension area. It might be more meaningful to consider the combined Retirement (Defined Benefit Pension and Employer Defined Contribution) results.

Two base companies provide a choice between a defined benefit and a defined contribution plan, and one base company provides a hybrid defined benefit/defined contribution plan. If we remove these three companies from the comparison, OPG's employer-paid and total indexes would be [REDACTED] and [REDACTED] respectively ([REDACTED]).

In the defined benefit plan comparison, OPG is [REDACTED]

[REDACTED]

[REDACTED]



Defined Contribution

For ease of reference, we have divided the types of plans into three broad categories:

- **Unmatched plans** are those where the company makes a contribution regardless of whether or how much employees contribute. This would include some money purchase plans and some profit sharing plans. The value provided by these plans is generally greater than matched plans, not only because unmatched plans tend to have higher levels of company contributions, but also because participation is automatic, whereas not all employees will fully participate in matched plans.

The primary driver of value for unmatched plans is the level of company contribution.

- **Matched plans** are those where the company contribution is directly linked to how much employees contribute. Only the company contribution to these plans has been included in the values, since employee contributions (while necessary to get company-matching dollars) represent a very large part of the total value and differ little from an individual account that an employee could be accumulating while working for a company that does not have this type of plan.

The primary drivers of value for matched plans are the company matching contribution rate and the level of employee contributions that are matched.

- **Stock purchase plans** are those where the company makes a matching contribution linked to how much employees contribute and all contributions are used to purchase company stock, or the company does not make a direct contribution; rather employee contributions are used to purchase company stock at a discount.

The primary driver of value for stock purchase plans are the company matching contribution rate and the level of employee contributions that are matched, or the discount on the price of company stock.

When all types of plans are considered, the primary driver of value is the maximum potential company contribution (calculated assuming employees make the maximum matched contribution).

Base Company Practices

For base companies that offer a choice between a defined benefit plan and a defined contribution plan, the comments that follow reflect the defined contribution plan.

For base companies where contributions are related to age, service, age-plus-service points, or pay, the comments that follow are based on the following "straw-person" (although the indexes and rankings reflect a diverse population with employees with many different combinations of age, service, and pay):

- Age—40
- Service—10 years
- Pay—\$69,000

For base companies where contributions are related to profits, the comments that follow reflect the most recent actual payout.



Type of Plan

	Number of Base Companies
No defined contribution plan	13/16
Unmatched plan	2/16
Matched plan	3/16
Stock purchase plan	0/16

Inclusion of Bonus³ in Pay Definition

	Number of Plans
Bonus not included	0/3
Full bonus included	3/3

Unmatched Plans

Company Contribution	Number of Plans
Less than 2% of pay	0/2
2% to 3.99% of pay	0/2
4% to 5.99% of pay	1/2
6% to 7.99% of pay	1/2
8% of pay or more	0/2
Average company contribution (for those with unmatched plans)	

Matched Plans

For base companies where the Company matching contribution is related to the level of employee contributions, the comments that follow reflect an average matching rate.

Matching Contribution Rate	Number of Plans
Less than \$0.25 per \$1.00 of employee contribution	0/3
\$0.25 to \$0.49 per \$1.00 of employee contribution	0/3
\$0.50 to \$0.74 per \$1.00 of employee contribution	0/3
\$0.75 to \$0.99 per \$1.00 of employee contribution	0/3
\$1.00 or more per \$1.00 of employee contribution	3/3
Average company matching contribution rate (for those with matched plans)	

³ Performance-based supplemental compensation; sales incentives, commissions, and overtime are not considered bonuses for this study.



Matched Level of Employee Contribution	Number of Plans
Less than 2% of pay	0/3
2% to 3.99% of pay	1/3
4% to 5.99% of pay	2/3
6% to 7.99% of pay	0/3
8% of pay or more	0/3
Average matched level of employee contribution (for those with matched plans)	

All Plans

Maximum Potential Company Contribution	Number of Plans
Less than 2% of pay	0/3
2% to 3.99% of pay	0/3
4% to 5.99% of pay	1/3
6% to 7.99% of pay	0/3
8% of pay or more	2/3
Average maximum potential company contribution (for those with defined contribution plans)	

Ontario Power Generation

OPG does not provide defined contribution benefits; therefore, the indexes are zero. Two base companies offer a choice between a defined benefit plan and a defined contribution plan, as well as a Savings plan for all employees. One base company provides a hybrid Defined Benefit/Defined Contribution plan. The remaining ten base companies do not provide defined contribution benefits (only a defined benefit plan).

When the defined benefit plan and defined contribution plan values are combined,



Comments—Death

Competitive Position

	Employer-Paid Value		Total Value	
	Index	Ranking	Index	Ranking
Preretirement Death—Group Life Only	■	■	■	■
All Preretirement Death	■	■	■	■
Postretirement Death	■	■	■	■
All Death	■	■	■	■

Preretirement Death—Group Life Only

In the Preretirement Death—Group Life Only comparison, the total value index is based on the value of all available coverage (employer-paid and optional employee-paid), while the employer-paid value index is based on the total value reduced by employee contributions. If contribution rates for optional employee-paid coverage are lower than expected claims, there may be some employer-paid value associated with the optional coverage.

The primary driver of total value is total available employee life insurance. The primary drivers of employer-paid value are the level of fully employer-paid employee life insurance and employer subsidies in any optional employee life insurance coverage. Dependent life insurance and AD&D coverage have a modest impact on the indexes and rankings.

Base Company Practices

The following tables summarize the base company practices.

Inclusion of Bonus⁴ in Pay Definition

	Number of Base Companies
Bonus not included	15/16
Full bonus included	1/16

⁴ Performance-based supplemental compensation; sales incentives, commissions, and overtime are not considered bonuses for this study.



Different Types of Coverage Offered/Provided

	Number of Base Companies
Employee life insurance coverage	
Employer-Paid	13/16
Employee-Paid	16/16
Spousal life insurance coverage	
Employer-Paid	0/16
Employee-Paid	12/16
Children's life insurance coverage	
Employer-Paid	0/16
Employee-Paid	11/16
Employee AD&D coverage	
Employer-Paid	5/16
Employee-Paid	10/16
Family AD&D coverage (employee-paid)	8/16

Fully Employer-Paid Employee Life Insurance

	Number of Base Companies	
None		3/16
Flat Dollar Amount		1/16
Less than \$25,000	0/1	
\$25,000 or more	1/1	
Pay-Related Amount		12/16
Less than 1 x pay	1/12	
1 x pay to 1.49 x pay	6/12	
1.5 x pay to 1.99 x pay	0/12	
2 x pay to 2.99 x pay	4/12	
3 x pay or more	1/12	
Average amount of fully employer-paid employee life insurance (for those providing coverage)		



Total Available Employee Life Insurance⁵

	Number of Base Companies
Less than 5 x pay	6/16
5 x pay to 5.99 x pay	3/16
6 x pay to 6.99 x pay	3/16
7 x pay to 7.99 x pay	1/16
8 x pay to 8.99 x pay	1/16
9 x pay to 9.99 x pay	0/16
10 x pay or more	2/16
Average amount of total available employee life insurance	

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[REDACTED]

[REDACTED]

All Preretirement Death

The All Preretirement Death indexes are determined by adding the value of preretirement death benefits from all sources—group life insurance, income-type benefits from separate survivor income plans, preretirement pension death benefits, and lump sum payouts from defined contribution plans.

The primary drivers of value are the level of group life insurance coverage, the other forms of death benefits provided, and the values of the associated underlying plans.

⁵ Where available coverage is limited to a flat dollar amount (not linked to a multiple of pay), we have converted to a multiple of pay using a \$69,000 average pay figure.



Base Company Practices

The following table summarizes the base company practices.

Prevalence

	Number of Base Companies
Group Life Insurance	16/16
Survivor Income Plans	0/16
Defined Benefit Pension Plans	16/16
Defined Contribution Plans	3/16

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OPG provides additional death benefit value (beyond group life) through the defined benefit plan. [REDACTED]

[REDACTED]



Postretirement Death

The primary driver of value is the ultimate level of life insurance coverage (after any reductions that apply on and after retirement). Plans that provide ultimate benefits related to pay generally have higher values than those that provide flat-dollar benefits. In some cases, the eligibility conditions for receiving benefits may have a significant impact.

Canadian accounting rules (CICA 3461) require that the cost of postretirement welfare benefits be accounted for during active employment. As a result, providing these benefits can have a significant impact on earnings for many organizations and may suggest that this is a benefit area where a high index is not desirable.

Base Company Practices

The following tables summarize the base company practices.

Ultimate Fully Employer-Paid Coverage

	Number of Base Companies	
Not applicable (no coverage)		5/16
Flat Dollar Amount		9/16
Less than \$5,000	5/9	
\$5,000 to \$9,999	0/9	
\$10,000 to \$19,999	3/9	
\$20,000 or more	1/9	
Pay-Related Amount		2/16
Less than 0.25 x pay	1/2	
0.25 x pay to 0.49 x pay	0/2	
0.5 x pay to 0.74 x pay	1/2	
0.75 x pay to 0.99 x pay	0/2	
1 x pay or more	0/2	

Service Requirements (assuming retirement at age 55)

	Number of Base Companies
Not applicable (no coverage)	5/16
No service requirement	2/16
1-9 years	2/16
10-19 years	6/16
20-29 years	0/16
30 years or more	1/16



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[REDACTED]

[REDACTED]



Comments—Disability

Competitive Position

	Employer-Paid Value		Total Value	
	Index	Ranking	Index	Ranking
Short-Term Disability	■	■	■	■
Long-Term Disability	■	■	■	■
All Disability	■	■	■	■

Short-Term Disability

The Short-Term Disability indexes reflect any disability benefit payable during the first six months of disability, regardless of source. The primary drivers of value are the duration of full salary continuation (i.e., at 100%) and the service requirements for full salary continuation.

Base Company Practices

The following table summarizes the base company practices.

	Number of Base Companies	
100% salary continuation for 6 months, regardless of service		2/16
100% salary continuation for up to 6 months depending on service		3/16
Less than 5 years of service required for 6-month, 100% salary continuation	0/3	
5 to 9.99 years of service required for 6-month, 100% salary continuation	0/3	
10 to 14.99 years of service required for 6-month, 100% salary continuation	2/3	
15 to 19.99 years of service required for 6-month, 100% salary continuation	1/3	
20 or more years of service required for 6-month, 100% salary continuation	0/3	
100% salary continuation for less than 6 months regardless of service		11/16



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Long-Term Disability

The Long-Term Disability (LTD) indexes reflect any disability benefits payable after the first six months of disability and before the normal retirement age. The primary drivers of total value are the level of pay replacement and the presence of any dollar limits.

Due to the nature of LTD benefit taxation in Canada, plans that are fully employee-paid provide non-taxable benefits to employees should they become disabled. The total index values reflect the total value of the benefit paid by the plan, but does not reflect a difference if the benefit is taxable or non-taxable.

Base Company Practices

The following tables summarize the base company practices.

Flexibility

	Number of Base Companies
Traditional LTD plan	9/16
Flexible LTD plan	7/16

Inclusion of Bonus⁶ in Pay Definition

	Number of Base Companies
Bonus not included	16/16
Full bonus included	0/16

For base companies with flexible LTD plans, the statistics in the following table relate to the average LTD option (based on actual election patterns).

⁶ Performance-based supplemental compensation; sales incentives, commissions, and overtime are not considered bonuses for this study.



Level of Pay Replacement⁷

	Number of Base Companies
Less than 50%	0/16
50% to 59%	3/16
60% to 69%	8/16
70% or more	5/16
Average	

Maximum Monthly LTD Benefit

	Number of Base Companies
No maximum benefit	5/16
Maximum monthly benefit	
Less than \$5,000	1/16
\$5,000 to \$9,999	3/16
\$10,000 to \$14,999	3/16
\$15,000 or more	4/16
Average maximum monthly LTD benefit (for those with a maximum)	

Employee Contributions

	Number of Base Companies
Not required for any LTD plan option	5/16
Required for some LTD plan options	4/16
Required for all LTD plan options	7/16

⁷ For plans with a step-rate formula, we have calculated the level of pay replacement using a \$69,000 average pay figure.



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[REDACTED]

[REDACTED]



Comments—Health Care

Competitive Position

	Employer-Paid Value		Total Value	
	Index	Ranking	Index	Ranking
Preretirement Medical	████	██████	████	██████
Preretirement Dental	████	██████	████	██████
All Preretirement Health Care (Including HCSAs and excess credits)	████	██████	████	██████
Postretirement Health Care	████	██████	████	██████
All Health Care	████	██████	████	██████

Preretirement Medical

The primary driver of total value is the level of coinsurance for major medical, prescription drugs, and hospital coverage. Other significant drivers of value include cost management features in the design of the plan and vision care benefits.

Base Company Practices

The following tables summarize the base company practices.

Flexibility

	Number of Base Companies
Traditional medical plan	5/16
Flexible medical plan	11/16



Coinsurance (Most Common Option)

	Number of Base Companies
For major medical services (excluding prescription drugs)	
Less than 80%	0/16
80% to 89%	4/16
90% to 99%	2/16
100%	10/16
Average	■
For prescription drugs	
Less than 80%	0/16
80% to 89%	6/16
90% to 99%	4/16
100%	6/16
Average	■

Presence of Other Cost Management Features (Any Option)

	Number of Base Companies
Deductibles	
For all major medical services	5/16
For all major medical services excluding prescription drugs	1/16
For prescription drugs only	1/16
Dispensing fee caps	7/16
Drug formularies	1/16
Generic reimbursement	7/16

Hospital Benefits (Most Common Option)

	Number of Base Companies
Semi-private hospital	
Full coverage (100%) with no dollar maximum	10/16
Full coverage (100%) with dollar maximum	5/16
Partial coverage	0/16
Not covered	1/16
Private hospital	
Full coverage (100%) with no dollar maximum	3/16
Full coverage (100%) with dollar maximum	3/16
Partial coverage	1/16
Not covered	9/16



Vision Care Maximum Benefits (Most Common Option)

	Number of Base Companies
Not covered	0/16
\$1 to \$99 every 2 years	0/16
\$100 to \$199 every 2 years	0/16
\$200 to \$299 every 2 years	6/16
\$300 or more every 2 years	10/16
Average (for those providing coverage)	

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Preretirement Dental

The primary drivers of value are the level of coinsurance for dental services, the maximum benefits for orthodontic services, and the cost management features in the design of the plan.

Base Company Practices

The following tables summarize the base company practices.

Flexibility

	Number of Base Companies
Traditional dental plan	8/16
Flexible dental plan	8/16

Coinsurance (Most Common Option)

	Number of Base Companies
For diagnostic and preventative services (e.g., exams, cleanings, x-rays)	
Less than 80%	0/16
80% to 89%	5/16
90% to 99%	4/16
100%	7/16
Average	■
For other basic services (e.g., fillings, extractions)	
Less than 80%	0/16
80% to 89%	6/16
90% to 99%	4/16
100%	6/16
Average	■
For major services (e.g., crowns, bridges, dentures)	
Not covered	0/16
50%	7/16
60%	4/16
80%	3/16
100%	2/16
Average	■



Coverage for Orthodontic Services (Most Common Option)

	Number of Base Companies
Not applicable (no coverage)	3/16
Orthodontic services covered for dependent children only	6/16
Orthodontic services covered for adults and dependent children	7/16

Lifetime Maximum Benefits for Orthodontic Services (Most Common Option)

	Number of Base Companies
Not applicable (no coverage)	3/16
Under \$1,500	1/16
\$1,500-\$1,999	1/16
\$2,000-\$2,499	5/16
\$2,500-\$2,999	1/16
\$3,000 or more	5/16
Other (Combined Maximum)	0/16
Average (for those providing coverage)	

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[REDACTED]

[REDACTED]

All Preretirement Health Care

[REDACTED]



Postretirement Health Care

The primary driver of value is whether or not medical and/or dental benefits continue after retirement. In some cases, the eligibility conditions for receiving benefits may have a significant impact. Differences in the plan benefits (coinsurance, deductibles, and maximum amounts) also have an impact on the values.

There can be significant cost implications of continuing medical benefits for retirees. Retiree health care costs have increased rapidly due to health care inflation; cutbacks in provincial health care plans have also had an impact in some provinces. At some organizations, costs have also increased from expanded retiree populations (due to workforces maturing or the availability of early retirement “windows”). Some court cases have indicated that it can be difficult to cut back on these retiree benefits.

Canadian accounting rules (CICA 3461) require that the cost of postretirement welfare benefits be accounted for during active employment. As a result, providing these benefits can have a significant impact on earnings for many organizations and may suggest that this is a benefit area where a high index is not desirable.

Base Company Practices

The following tables summarize the base company practices.

Coverage

	Number of Base Companies
No coverage available	1/16
Medical coverage available; no dental coverage	3/16
Both medical and dental coverage available	12/16

Service Requirements (assuming retirement at age 55)

	Number of Base Companies
Not applicable (no coverage)	1/16
No service requirement	4/16
1-9 years	4/16
10-19 years	6/16
20-29 years	0/16
30 years or more	1/16



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[REDACTED]

[REDACTED]

[REDACTED]



Comments—Time Off With Pay

Competitive Position

	Employer-Paid Value		Total Value	
	Index	Ranking	Index	Ranking
Holidays	■	■	■	■
Vacations	■	■	■	■
All Time Off With Pay	■	■	■	■



The total and employer-paid values in this benefit area are the same.

Holidays

Holidays is defined to include statutory holidays, personal days, and floating days. Holidays does not reflect any “earned days” (where employees would work longer hours to earn additional days off).

The only driver of value in the Holidays index is the number of days off provided to employees.



Base Company Practices

The following table summarizes the base company practices.

Number of Days Off

	Number of Base Companies
11	4/16
12	2/16
13	1/16
14	2/16
15	0/16
16	0/16
17	3/16
18	1/16
19 to 22	0/16
23	1/16
24 to 28	0/16
29	1/16
30	0/16
31	1/16
Average	

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[REDACTED]

[REDACTED]



Vacations

The primary drivers of value are the timing of the introduction of the third and fourth week of vacation and the maximum length of vacation provided to employees. Companies that introduce the third and fourth week of vacation earlier in an employee's career generally rank higher. Companies that offer a fifth and/or sixth week of vacation, even if only for long-service employees, also generally rank higher.

For base companies that have a different vacation schedule for management/senior management employees, we have reflected the differences by dividing our model population into non-management, management, and senior management employees based on pay levels, and valuing the appropriate vacation schedule for the appropriate group of employees.

For base companies that allow vacation buying and selling within a flexible benefits program, we generally assume that employees neither buy nor sell vacation. The only exception might be where a company has scaled back its vacation schedule and given flexible credits to employees to "buy-back" the vacation days. In these cases we might assume that employees buy back the vacation days.

Base Company Practices

The following table summarizes the base company practices.

Weeks of Vacation

	Number of Base Companies Offering Week of Vacation	Average Service Required for Week of Vacation
Third	16/16	1.1 years
Fourth	16/16	6.8 years
Fifth	15/16	17.3 years
Sixth	13/16	25.7 years
Seventh	3/16	30.0 years

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Specifications



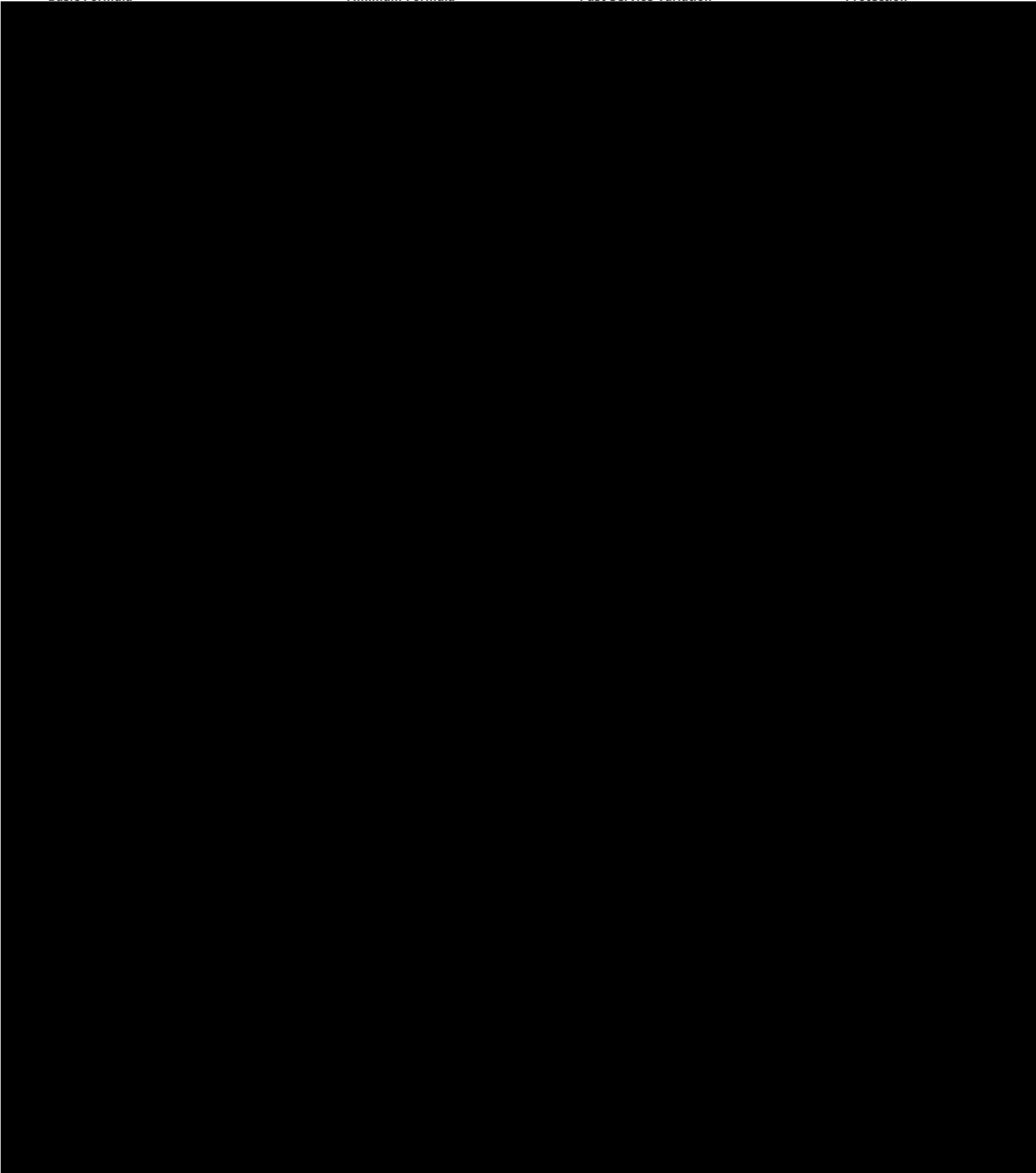
Specifications

This section summarizes the plan specifications in greater detail than appeared in the earlier Notes. These specifications remain brief in order to facilitate comparisons among the organizations.

Defined Benefit Pension: Normal Retirement Provisions

Organization	Yr	Type of Plan	Compensation	Integration with Government Pension	Eligibility for Participation
[REDACTED]					
Ontario Power	13	Highest 3-year average	Base, Bonus, up to 5% of pay	Step rate breakpoint at 3-year average YMPE	3 to 6 months (Mandatory)

Basic Formula	Minimum Formula	Past Service Variation	Automatic Inflation Protection
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(1.500% highest average pay up to 3-year average YMPE + 2.000% highest average pay over 3-year average YMPE) x participation	None	Benefit for service prior to 1/1/66: 2% highest average pay x participation	100% CPI (maximum 8.0%)
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Defined Benefit Pension: Other Retirement Provisions

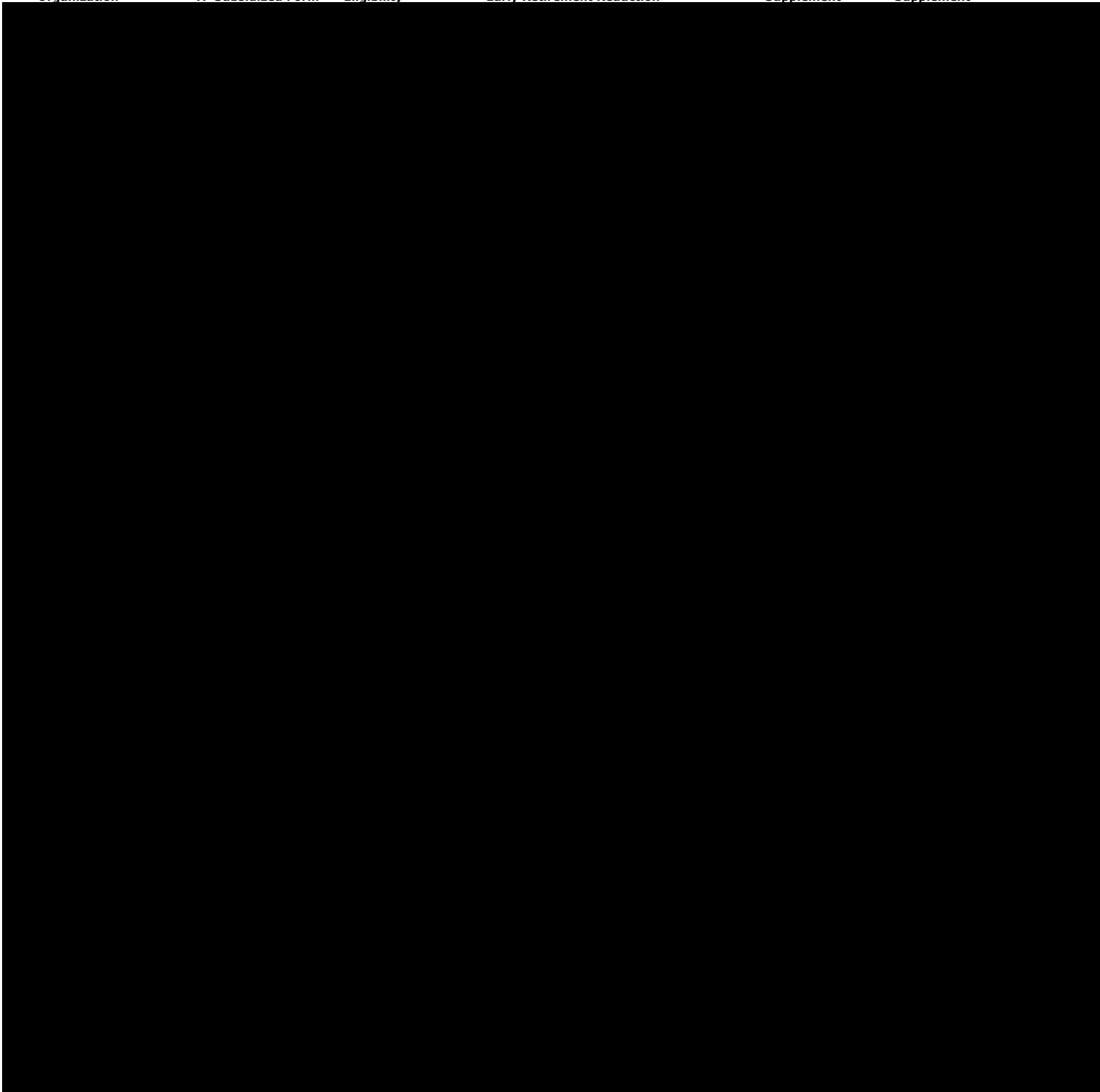
Organization	Yr	Subsidized Form	Early Retirement Eligibility	Early Retirement Reduction	Eligibility for Supplement	Supplement
Ontario Power	13	Single: 5 year certain and life Married: 66.67% spouse's annuity	Age 55 & 2 years participation	Actuarial reduction from age 65 If < 15 years of service; otherwise 2%/year from age 65; 3%/year from age 60 (None if 82 points or 35 years) (84 points for MGMT)	Same as early retirement	0.5% highest average pay up to 5-year average YMPE x participation (Maximum 35 years) Payable to age 65

----- Deferred Disability Benefits -----

Eligibility	Benefit	Broad Based Supplemental Benefits	Employee Contributions
Eligible for LTD benefits 10 years and not eligible for LTD benefits	Accrued benefit to date of disability Service continues to accrue while disabled	For all individuals impacted by government limits	5.00% of pay up to YMPE + 7.00% of pay over YMPE (7% of pay - Management) 

Defined Benefit Pension: Other Retirement Provisions

Organization	Yr	Subsidized Form	Early Retirement Eligibility	Early Retirement Reduction	Eligibility for Supplement	Supplement
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Ontario Power	13	Single: 5 year certain and life Married: 66.67% spouse's annuity	Age 55 & 2 years participation	Actuarial reduction from age 65 If < 15 years of service; otherwise 2%/year from age 65; 3%/year from age 60 (None if 82 points or 35 years) (84 points for MGMT)	Same as early retirement	0.5% highest average pay up to 5-year average YMPE x participation (Maximum 35 years) Payable to age 65
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----- Deferred Disability Benefits -----

Eligibility	Benefit	Broad Based Supplemental Benefits	Employee Contributions
Eligible for LTD benefits 10 years and not eligible for LTD benefits	Accrued benefit to date of disability Service continues to accrue while disabled	For all individuals impacted by government limits	5.00% of pay up to YMPE + 7.00% of pay over YMPE (7% of pay - Management)

Defined Contribution

----- Employee Contributions -----

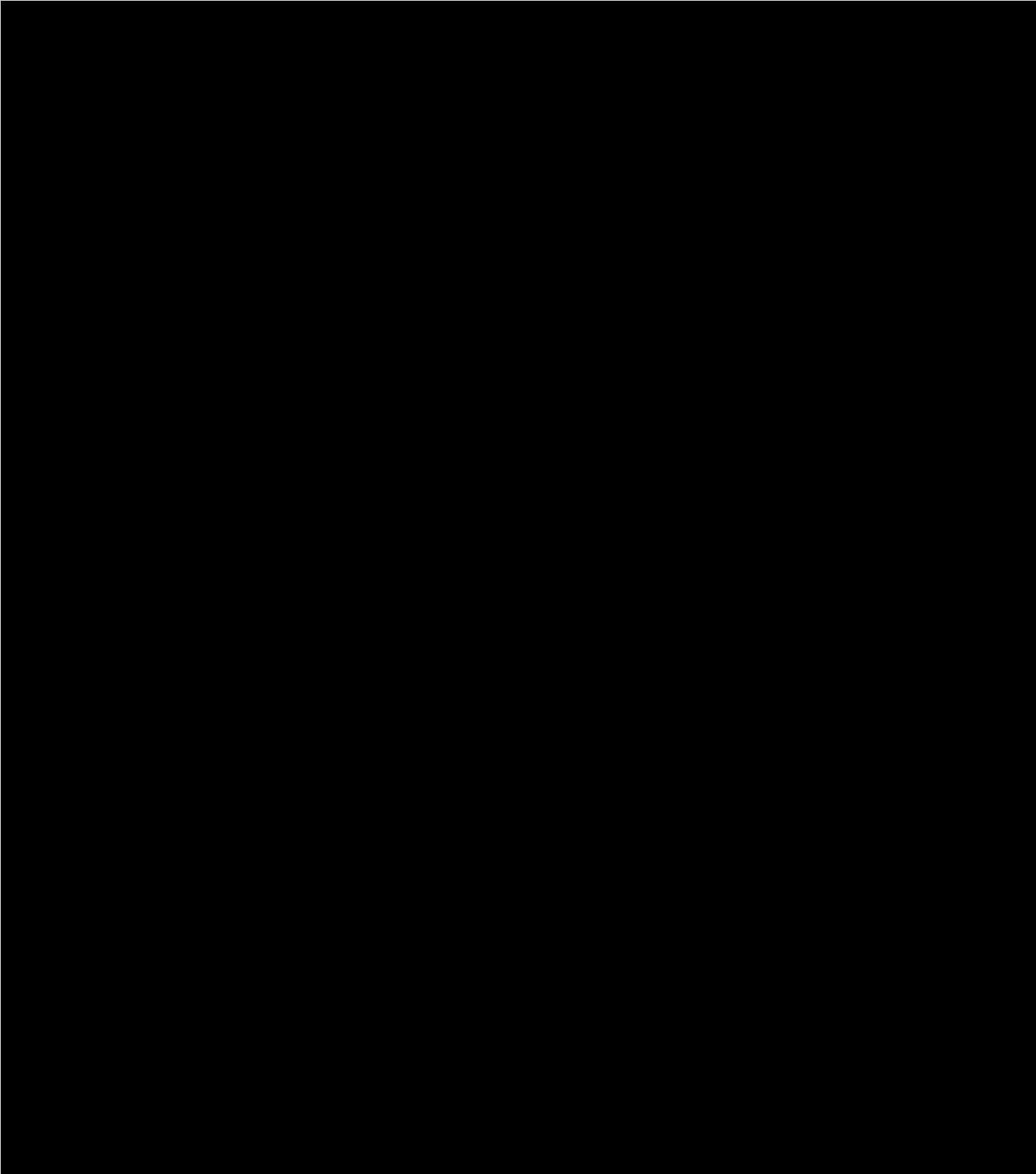
----- Employer Contributions -----

Organization	Yr	Type of Plan	Eligibility	Matched %	Employee Contributions		Employer Contributions	
					Total % Allowed	\$ Maximum	Matched Contributions	Unmatched Contributions
					</			

Compensation	Vesting in Contributions	Withdrawal Practices	Disposition of Forfeitures	--- Investment Options/(Tax Treatment) --- Employee Contributions	Employer Contributions	Default Investment
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[Redacted Table Content]						
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Preretirement Death: Employee Group Life
----- Employer-Paid Coverage -----



Ontario Power	13	Immediate	Base	2.00 x pay; No maximum	Continued without employee contribution
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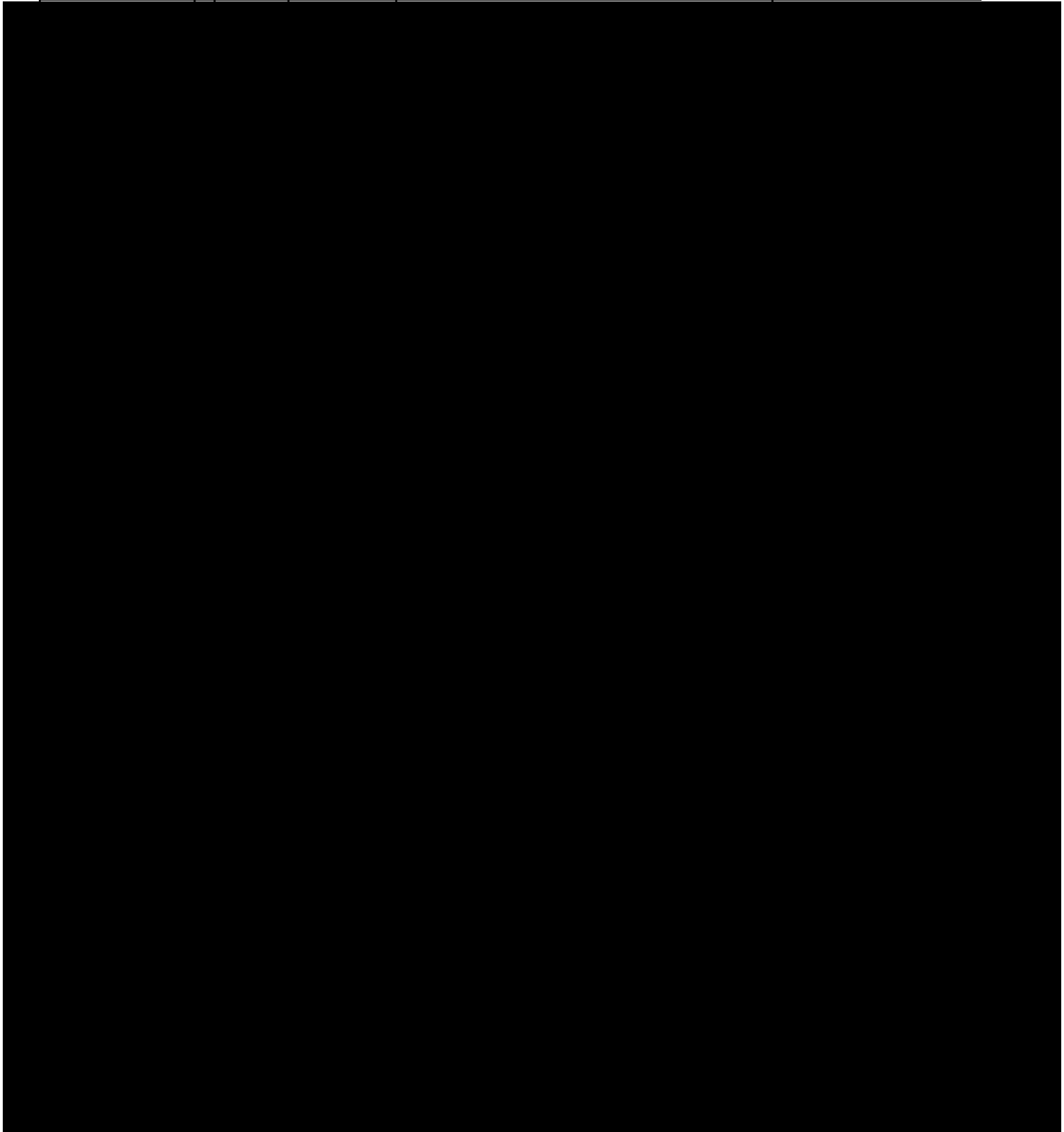
----- Contributory Coverage -----

Eligibility	Compensation	Contributory Amount	Treatment on Disability	Monthly Employee Contributions per \$1,000
Immediate	Base	1.00 x pay; No maximum	Continued without employee contribution	\$0.220

Preretirement Death: Employee Group Life

----- Employer-Paid Coverage -----

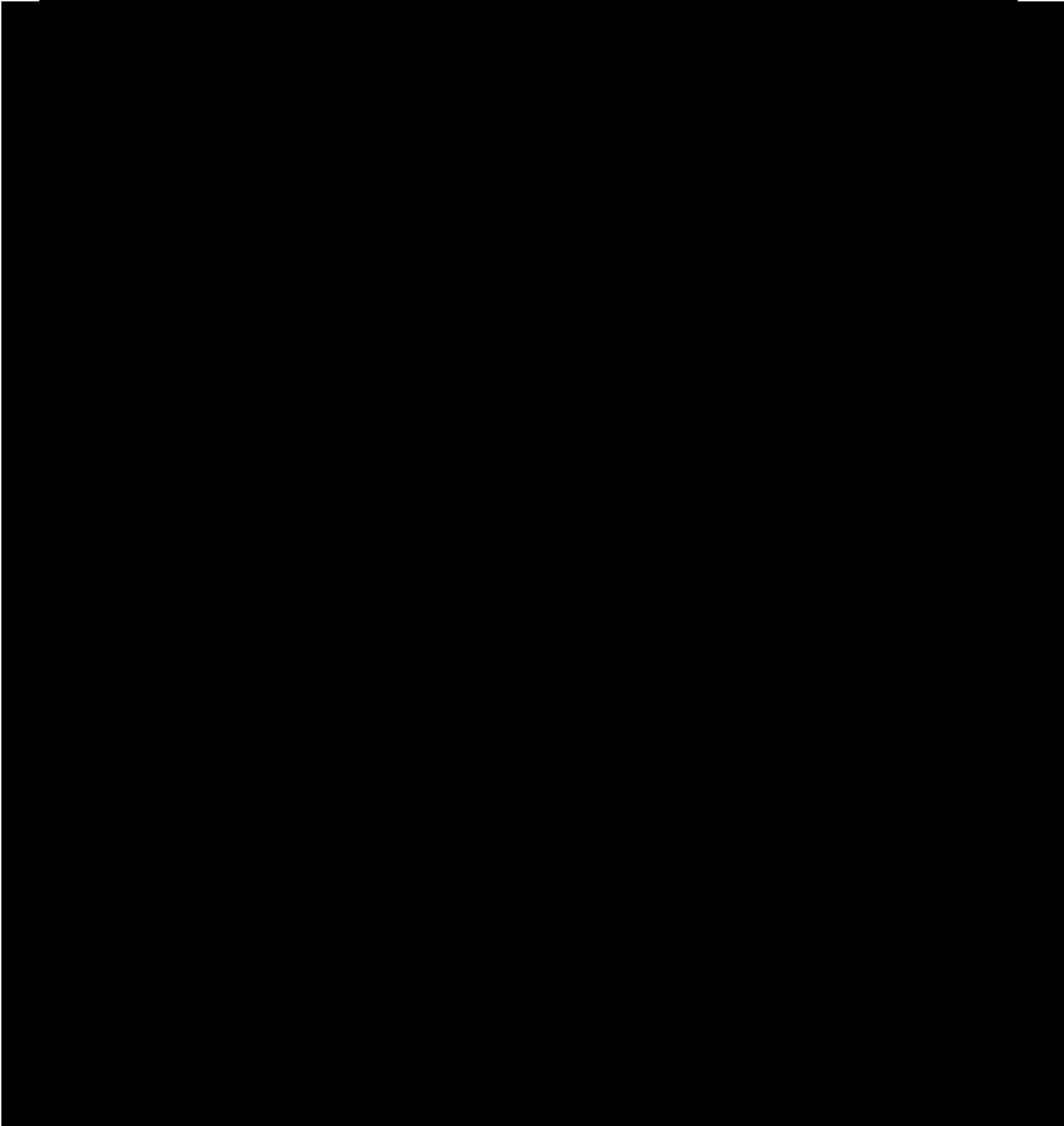
Organization	Yr	Eligibility	Compensation	Employer-Paid Amount	Treatment on Disability
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Ontario Power	13	Immediate	Base	2.00 x pay; No maximum	Continued without employee contribution
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----- Contributory Coverage -----

Eligibility	Compensation	Contributory Amount	Treatment on Disability	Monthly Employee Contributions per \$1,000
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Immediate	Base	1.00 x pay; No maximum	Continued without employee contribution	\$0.220
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Preretirement Death

----- Accidental Death and Dismemberment -----

Organization

Yr. Employer-Paid AD&D

Contributory AD&D

Monthly Employee
Contribs per \$1,000

Ontario Power

13 None

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----- Dependent Group Life -----

Employer-Paid Dependent Coverage

Contributory Dependent Coverage

Monthly Employee Contributions per \$1,000
for Dependents

Preretirement Death

----- Accidental Death and Dismemberment -----

Organization

Yr. Employer-Paid AD&D

Contributory AD&D

Monthly Employee
Contribs per \$1,000

Ontario Power

13

None

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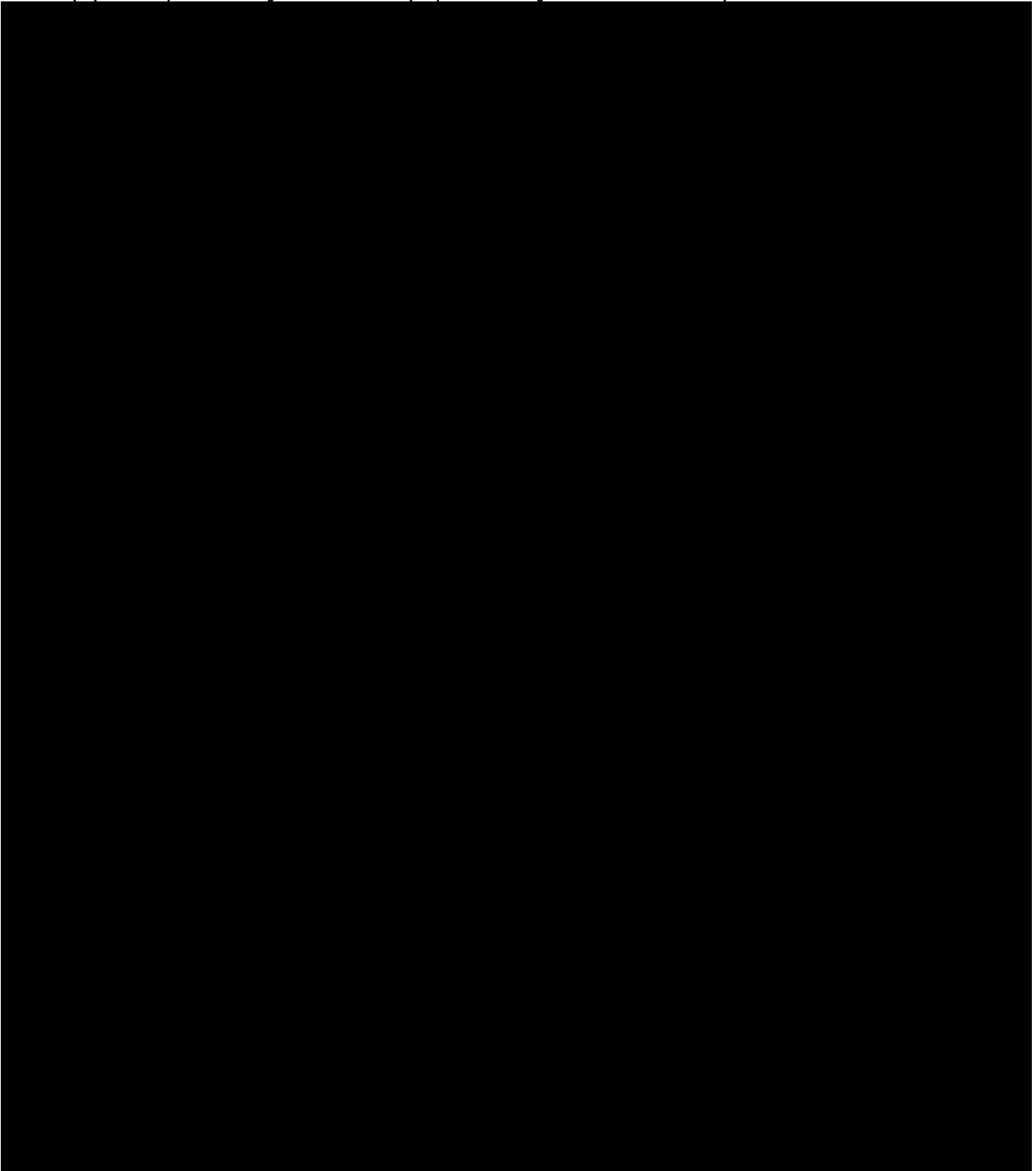
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----- Dependent Group Life -----

Employer-Paid Dependent Coverage

Contributory Dependent Coverage

Monthly Employee Contributions per \$1,000
for Dependents



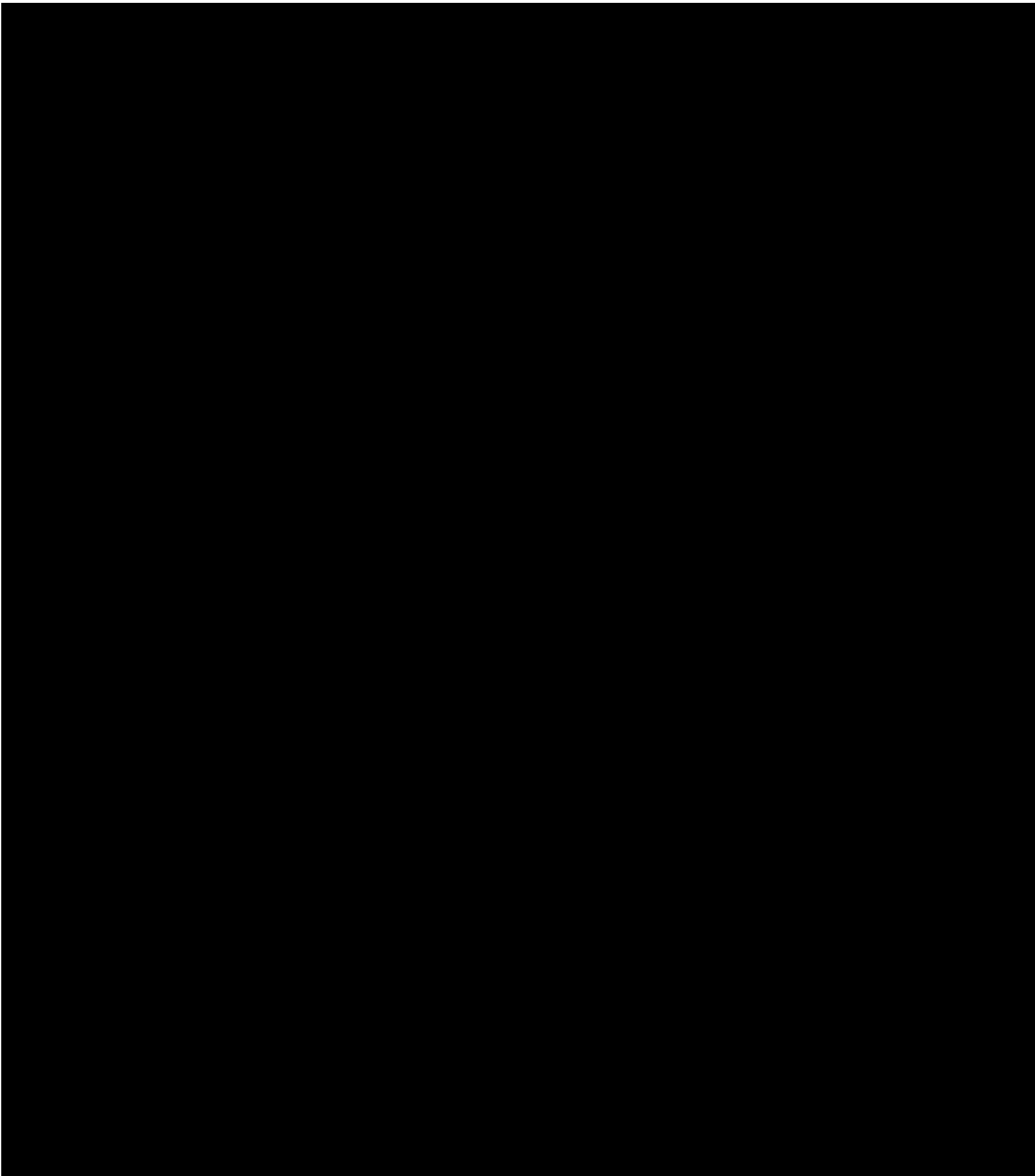
No spouse coverage
No children coverage

No spouse coverage
No children coverage

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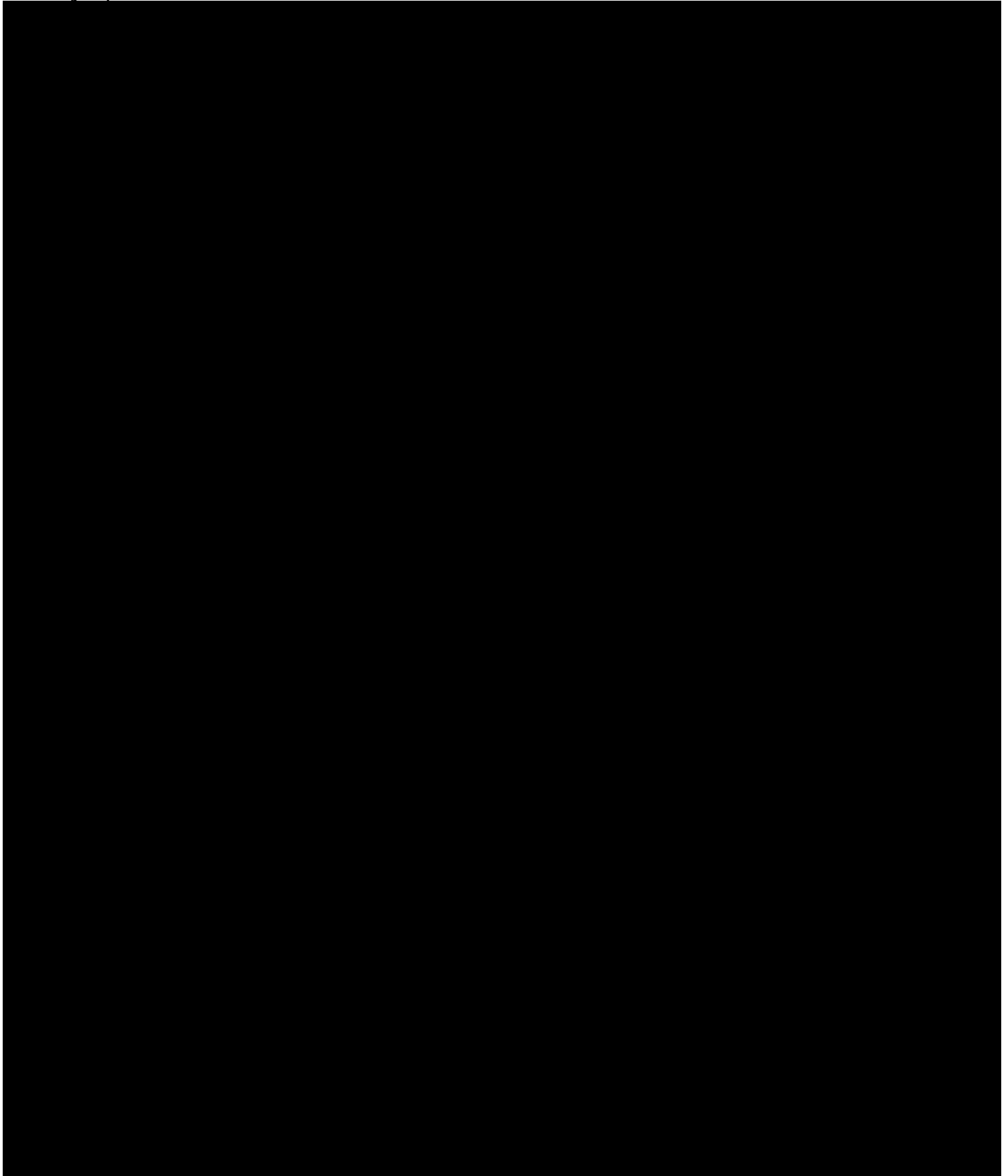
Preretirement Death: Survivors' Income

----- Survivors' Income (Other Than Pension) -----



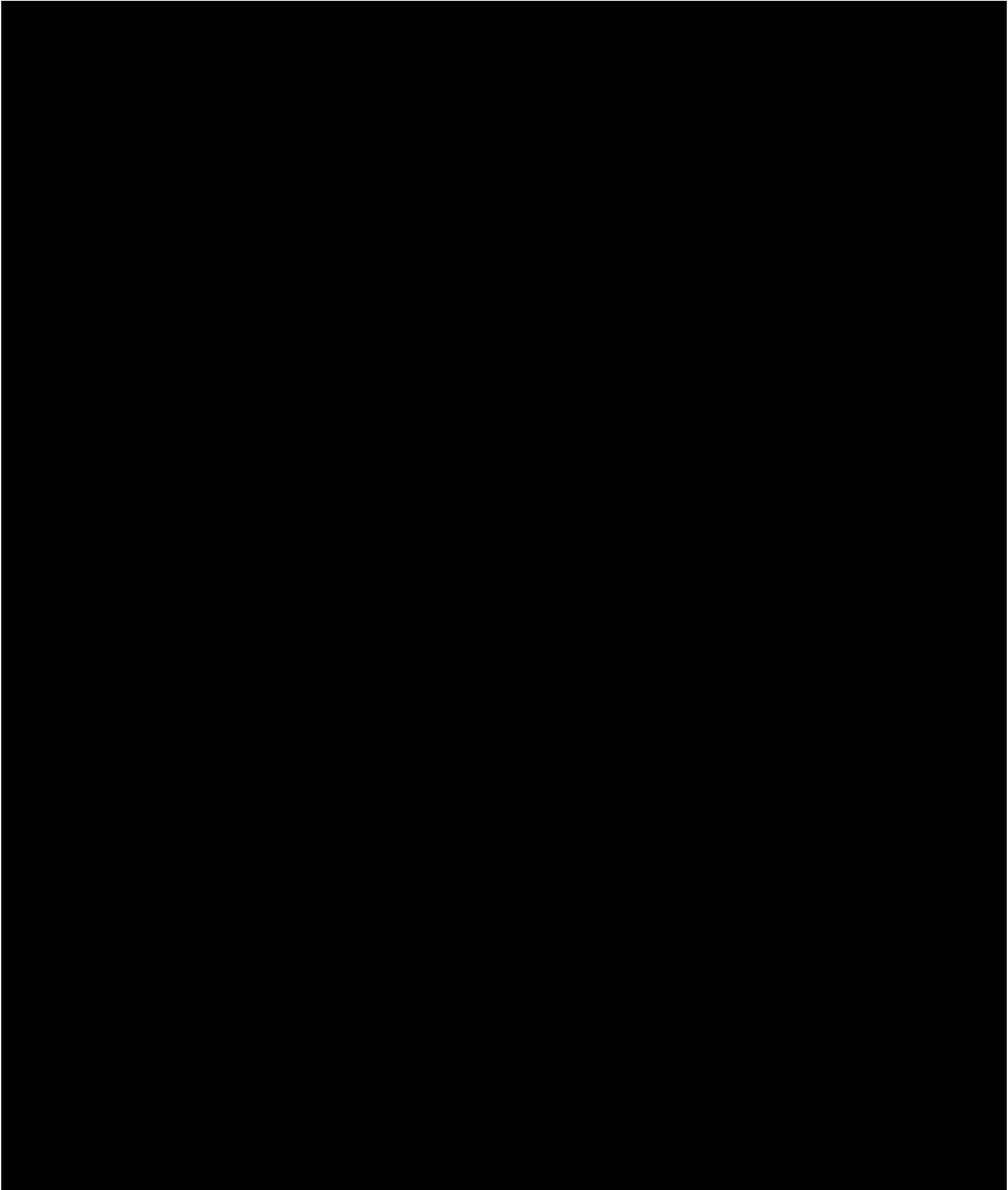
Ontario Power	13	--	--	--	--
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----- Pension Survivors' Benefits -----

Eligibility	Benefit Amount	Duration
		
10 years of service	66.67% of accrued Pre-1987 benefit plus greater of 66.67% of accrued Post-1986 benefit and Commuted value of Post-1986 benefit	Spouse: Life Orphan: Age 18; Life (disabled); 7 yrs post-high school (student) Lump sum only
2 years participation	Commuted value of Post-1986 benefit	

Postretirement Death

----- Continuation of Employer-Paid Active Coverage -----



Ontario Power	13	Age 55	0.50 x pay; No maximum	10 years after retirement	One-step	0.25 x pay
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----- Continuation of Contributory Active Coverage -----

Eligibility	Initial Amount	Reduction Begins	Reduction Pattern	Ultimate Amount	Monthly Employee Contributions
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Short-Term Disability

Organization	Yr	Type of Plan	Eligibility	Benefit Percent	C/QPP Offset	Benefit Maximum
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Benefit Begins	Benefit Duration	Employee Contributions
1st day		
6 months		
None		

Long-Term Disability

Organization	Yr	Type of Plan	Enrollment	Eligibility	Compensation	Benefit Percentage	C/OPP Offset
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						65% (no offset) 75% (employee offset) (taxable)	75% only
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Maximum/Minimum	Inflation Protection	Benefit Begins	Benefit Duration	Monthly Employee Contributions
Unlimited	100% CPI (Maximum 8%) (Ontario CPI)	6 months	To age 65	None

Long-Term Disability

Organization	Yr	Type of Plan	Enrollment	Eligibility	Compensation	Benefit Percentage	C/OPP Offset
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						65% (no offset) 75% (employee offset) (taxable)	75% only
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Maximum/Minimum	Inflation Protection	Benefit Begins	Benefit Duration	Monthly Employee Contributions
	(Maximum 8%) (Ontario CPI)			

Supplemental Preretirement Health Care

----- Excess Hospital -----

----- Major Medical -----

Organization Yr. Eligibility Semi-private Private Coinsurance Deductible Maximum

Ontario Power	13	Immediate	100%	100%	100%	None	Unlimited

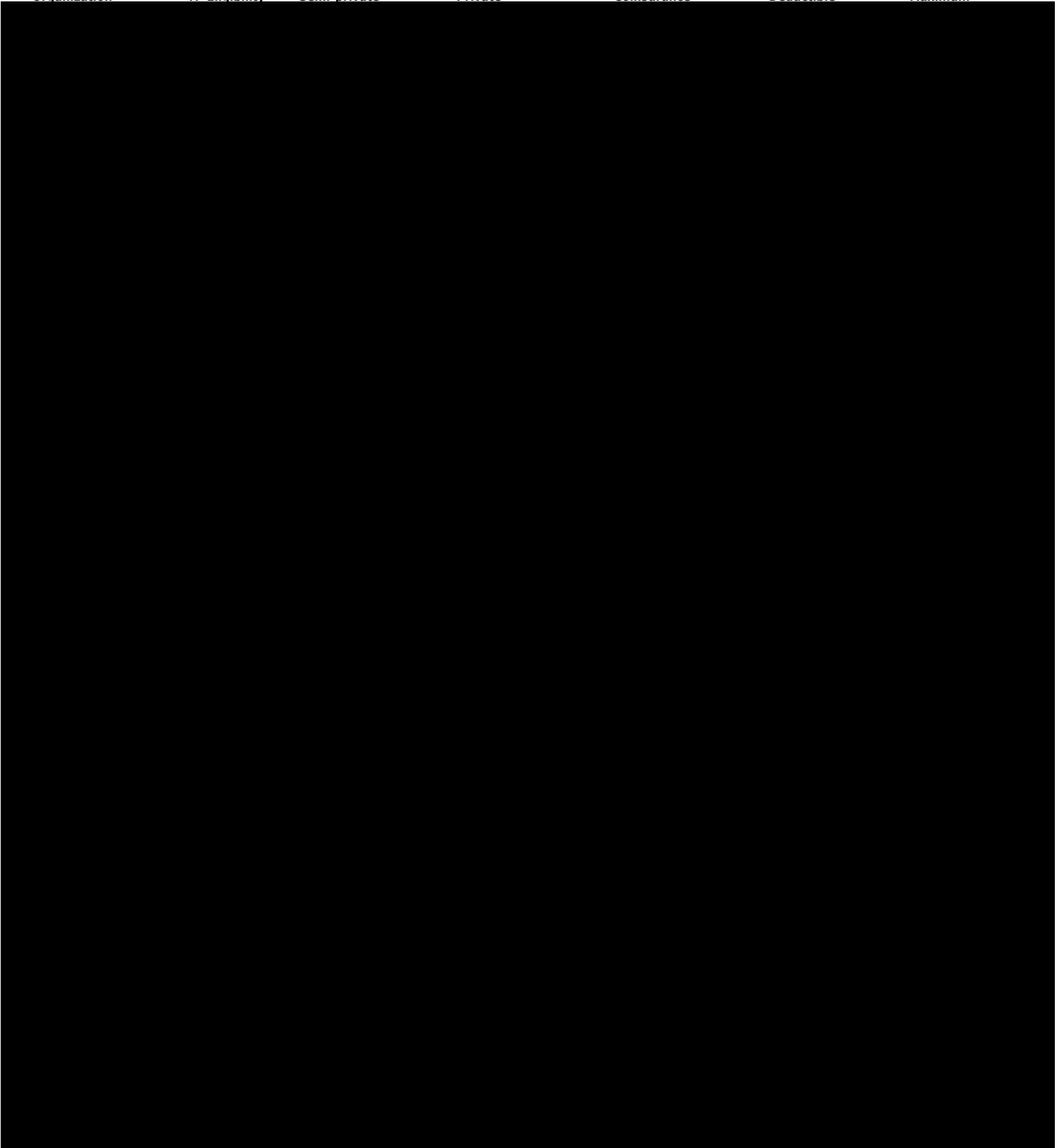
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Supplemental Preretirement Health Care

----- Excess Hospital -----

----- Major Medical -----

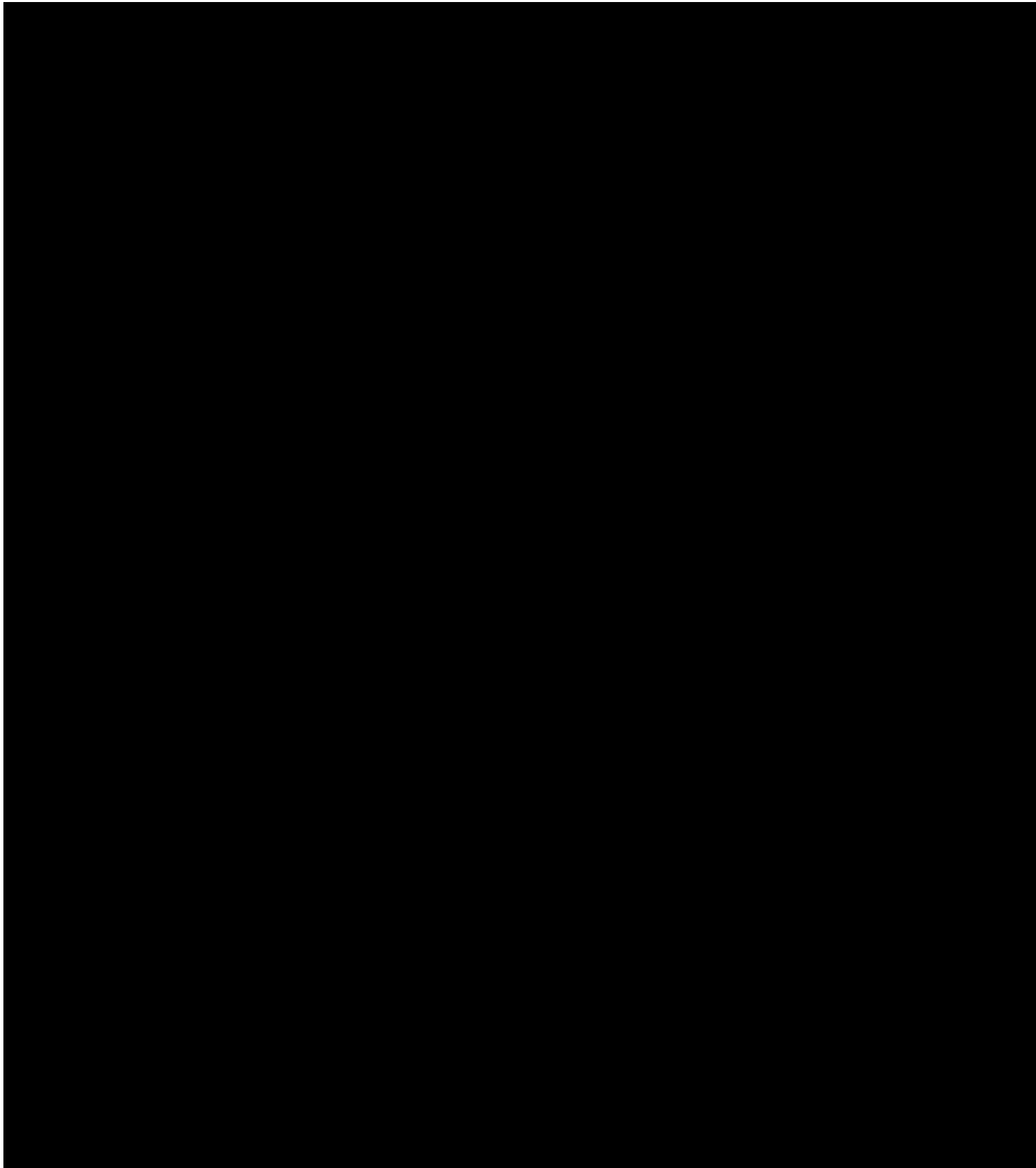
Organization	Yr	Eligibility	Semi-private	Private	Coinsurance	Deductible	Maximum
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Ontario Power	13	Immediate	100%	100%	100%	None	Unlimited
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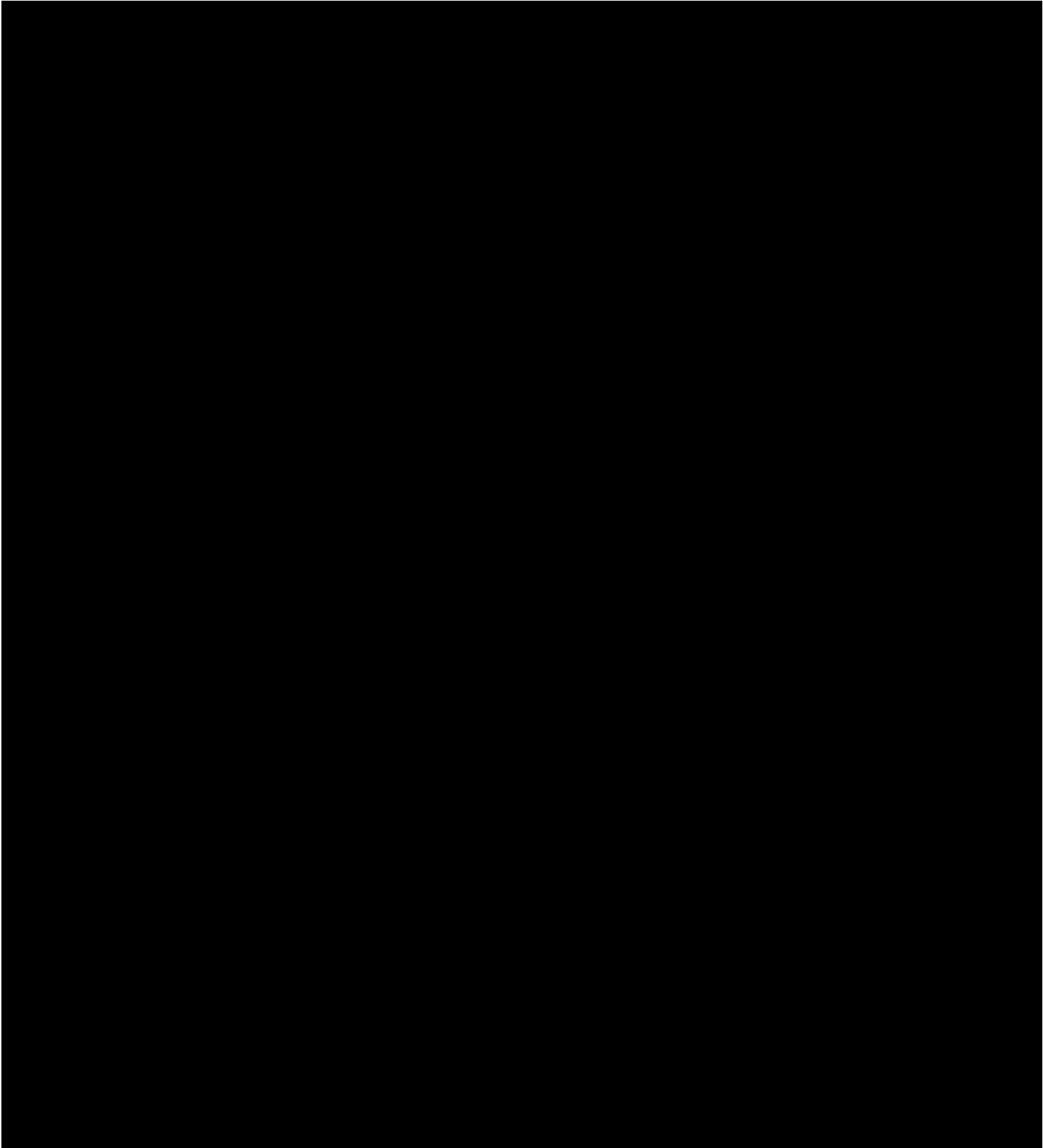
Supplemental Preretirement Health Care - Additional Medical Benefits



	Exams: 1 exam(s)/1 year	customary/3 years	/year (Reimbursed at 50%)	/year (Reimbursed at 50%)	
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Naturopath	Osteopath	Physiotherapist	Podiatrist	Private Duty Nurse	Psychologist	Speech Therapist
Combined maximum \$700/year (Reimbursed at 50%)	Combined maximum \$700/year (Reimbursed at 50%)	\$2,000/year	Combined maximum \$700/year (Reimbursed at 50%)	Reasonable and Customary	\$5,000/year	\$500/year

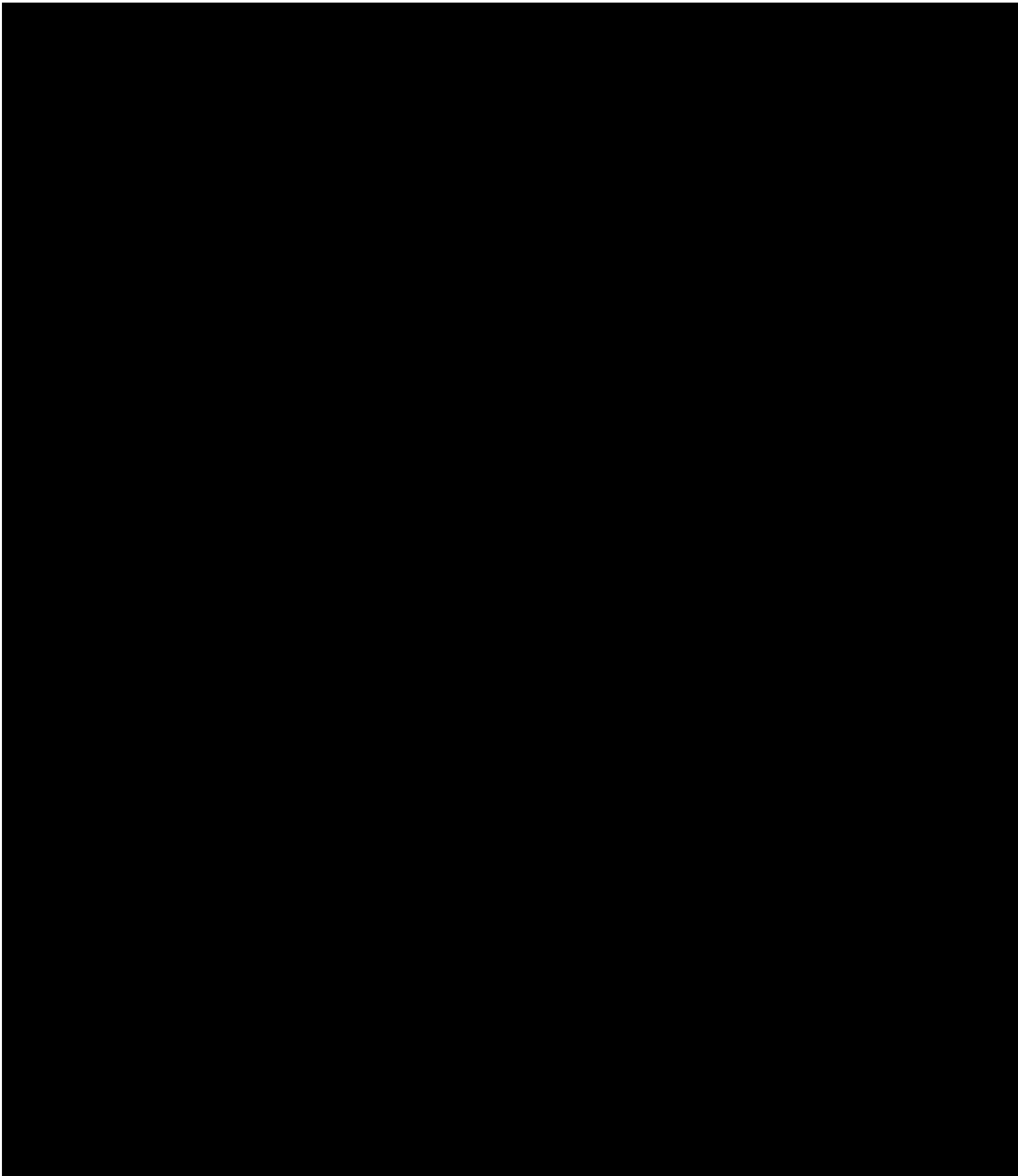
Supplemental Preretirement Health Care - Additional Medical Benefits



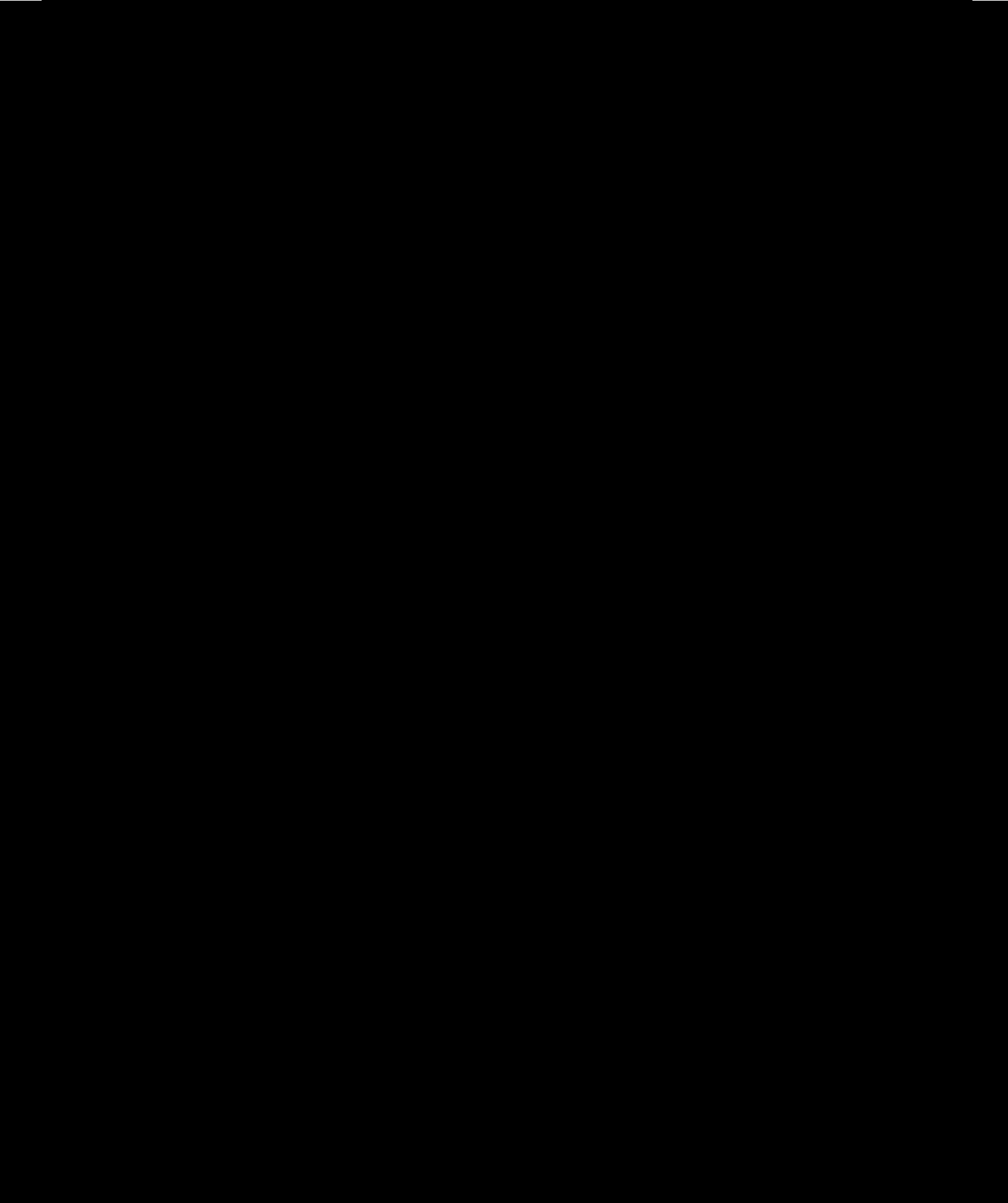
		Exams: 1 exam(s)/1 year	customary/3 years	/year (Reimbursed at 50%)	/year (Reimbursed at 50%)	
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Naturopath	Osteopath	Physiotherapist	Podiatrist	Private Duty Nurse	Psychologist	Speech Therapist
Combined maximum \$700/year (Reimbursed at 50%)	Combined maximum \$700/year (Reimbursed at 50%)	\$2,000/year	Combined maximum \$700/year (Reimbursed at 50%)	Reasonable and Customary	\$5,000/year	\$500/year

Supplemental Preretirement Health Care - Prescription Drugs

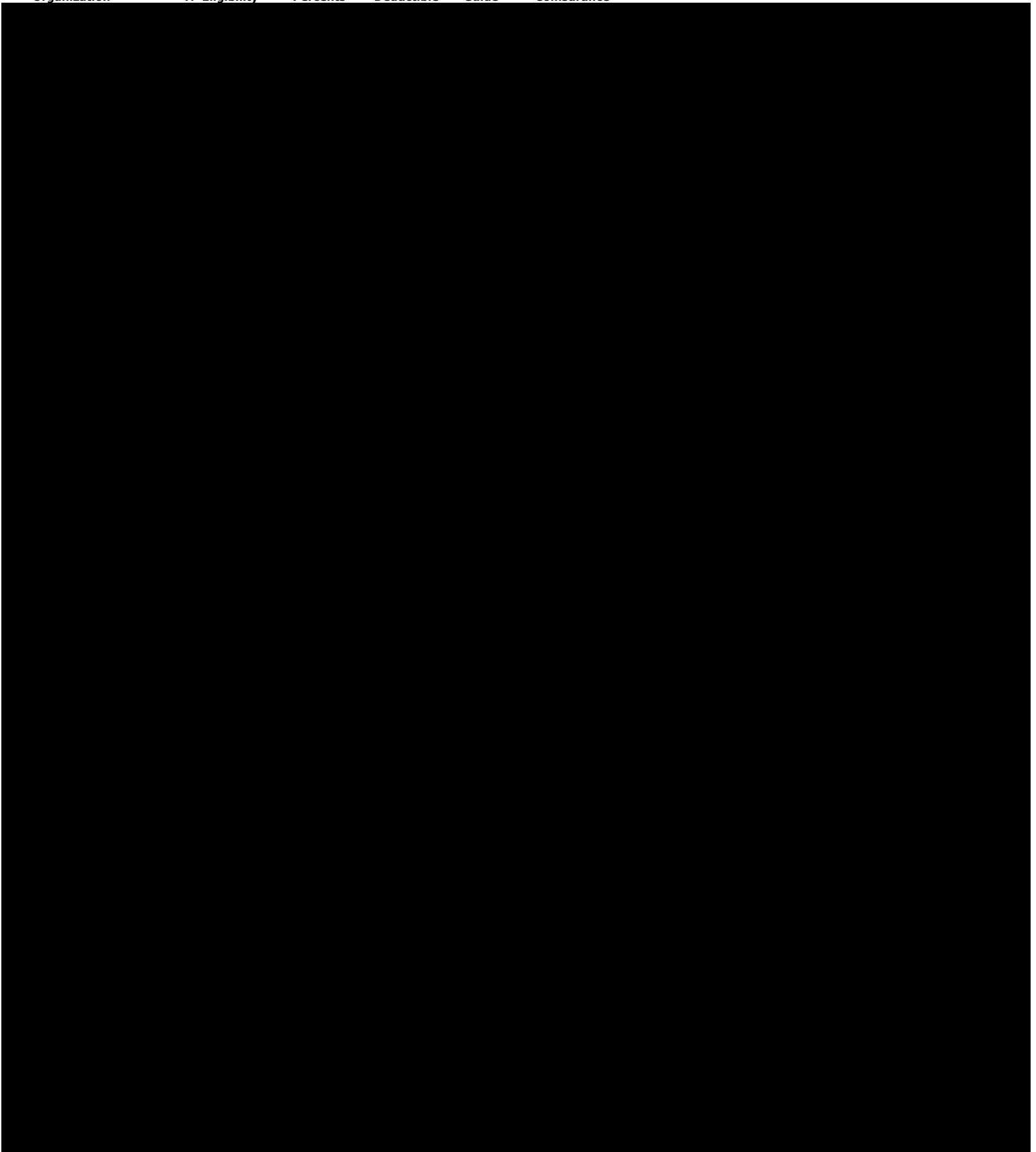


Ontario Power	13	Integrated with medical	100%	\$5.00 maximum dispensing fee Generic reimbursement
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Annual Deductible/OOP/Maximum	Monthly Employee Contributions or Price Tags	Monthly Employee Contributions Addtl Information
		
No deductible; No sep max	None	--

Dental

Organization	Yr	Eligibility	Enrollment Percents	Annual Deductible	Fee Guide	Coinsurance
--------------	----	-------------	------------------------	----------------------	--------------	-------------



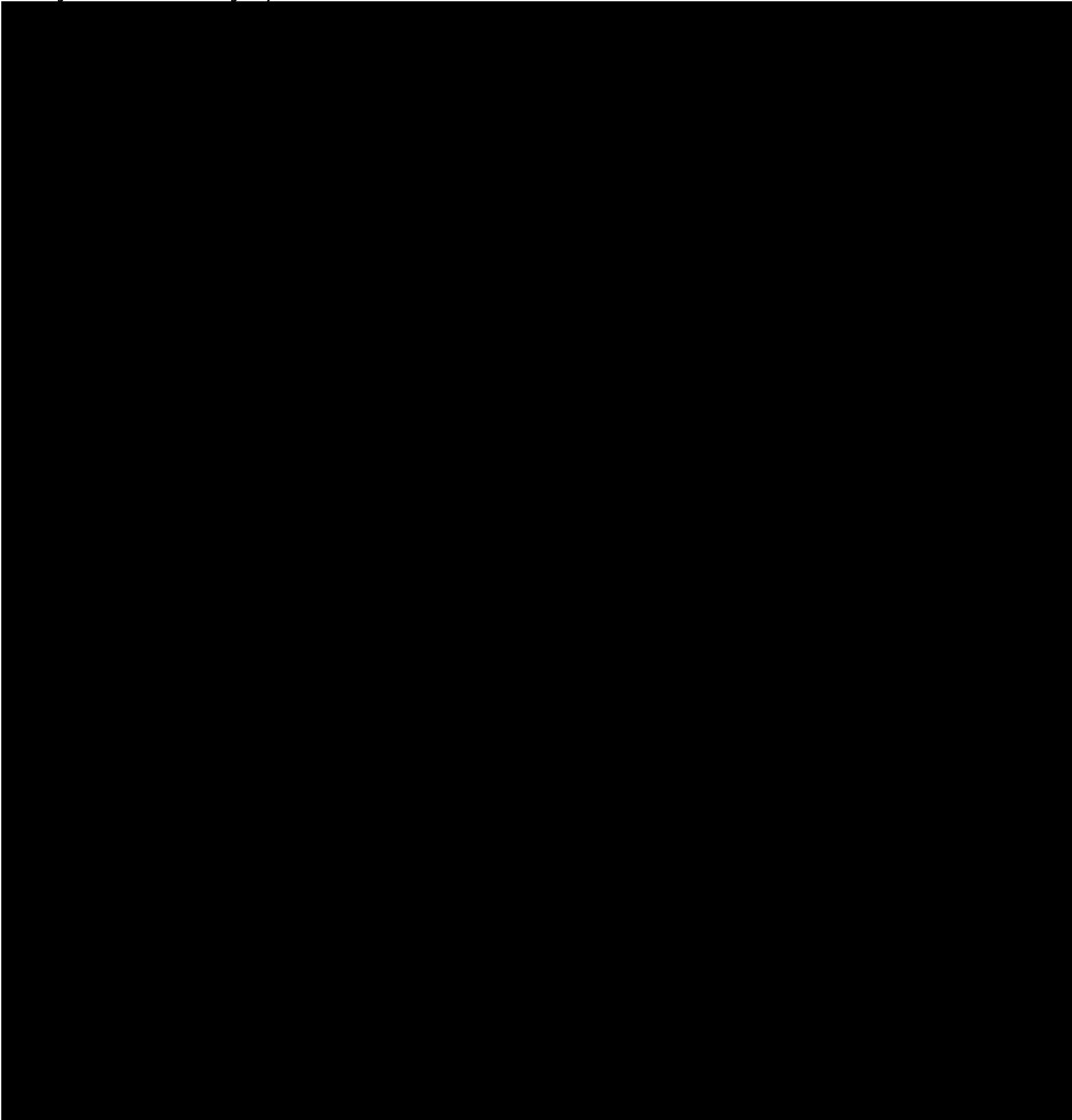
Ontario Power	13	Immediate	--	None	Current provincial	100% exams, 100% cleaning, 100% x-rays, 100% fillings, 85% endodontics, 85% periodontics, 85% inlays, 85% crowns, 85% dentures, 85% bridgework
---------------	----	-----------	----	------	--------------------	--

----- Orthodontia -----

Recall Exams	Maximum	Eligible Groups	Coinsurance	Lifetime Maximum	Monthly Employee Contributions	Additional Information
9 months	Unlimited	Adults and dependent children	75%	\$4,000	None	

Dental

Organization	Yr	Eligibility	Enrollment Percents	Annual Deductible	Fee Guide	Coinsurance
--------------	----	-------------	------------------------	----------------------	--------------	-------------



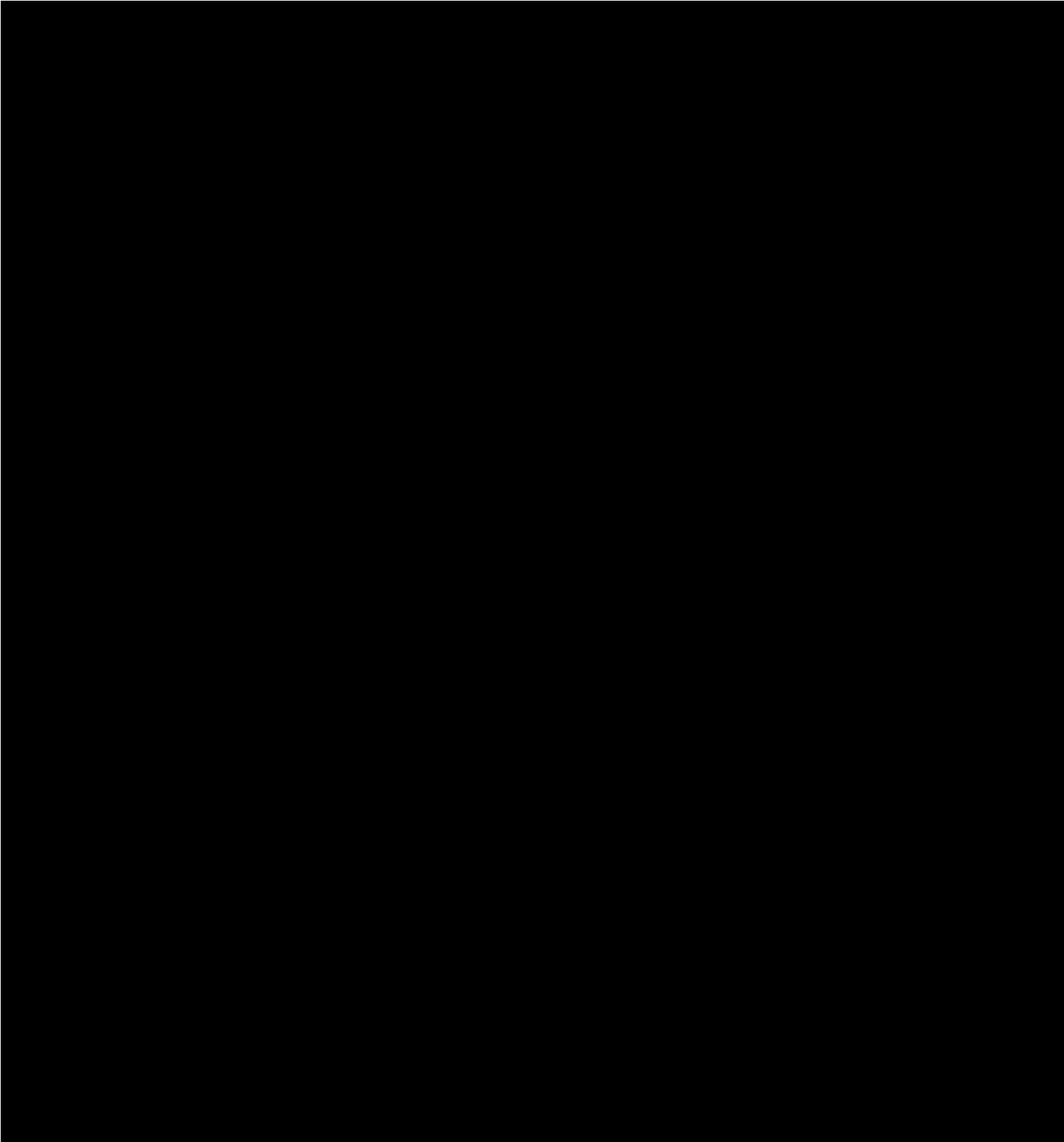
Ontario Power	13	Immediate	--	None	Current provincial	100% exams, 100% cleaning, 100% x-rays, 100% fillings, 85% endodontics, 85% periodontics, 85% inlays, 85% crowns, 85% dentures, 85% bridgework
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----- Orthodontia -----

Lifetime

Monthly Employee

Additional

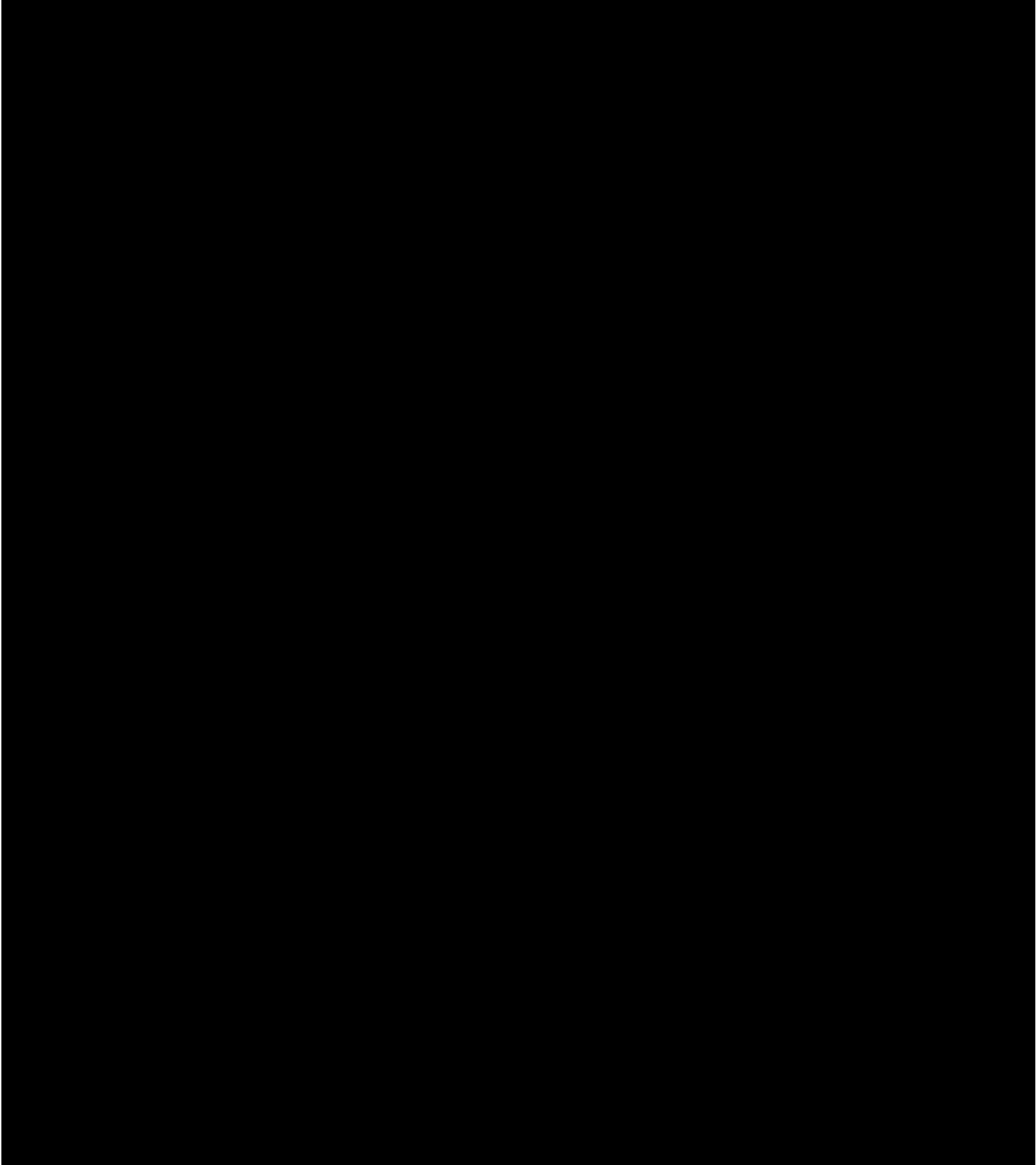


9 months	Unlimited	Adults and dependent children	75%	\$4,000	None	
----------	-----------	-------------------------------	-----	---------	------	--

Postretirement Health Care and Dental

Medical

Organization	Yr	Medical	Vision & Hearing	Continuation on Death	Monthly Retiree Contributions
--------------	----	---------	------------------	-----------------------	-------------------------------



Ontario Power	13	Same as active	Active vision & hearing	Continued to spouse for lifetime	None
---------------	----	----------------	-------------------------	----------------------------------	------

Continuation on Death

Provincial Premium Reimbursement

Eligibility for Postretirement Medical and Dental

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2. **Background**

3. **Methodology**

4. **Results**

5. **Discussion**

6. **Conclusion**

7. **References**

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2

Same as active	Continued to spouse for lifetime	None	--	Health care: Age 55 & 10 years or 25 years Dental: Age 55 & 10 years or 25 years
----------------	----------------------------------	------	----	---

Postretirement Health Care and Dental

Medical

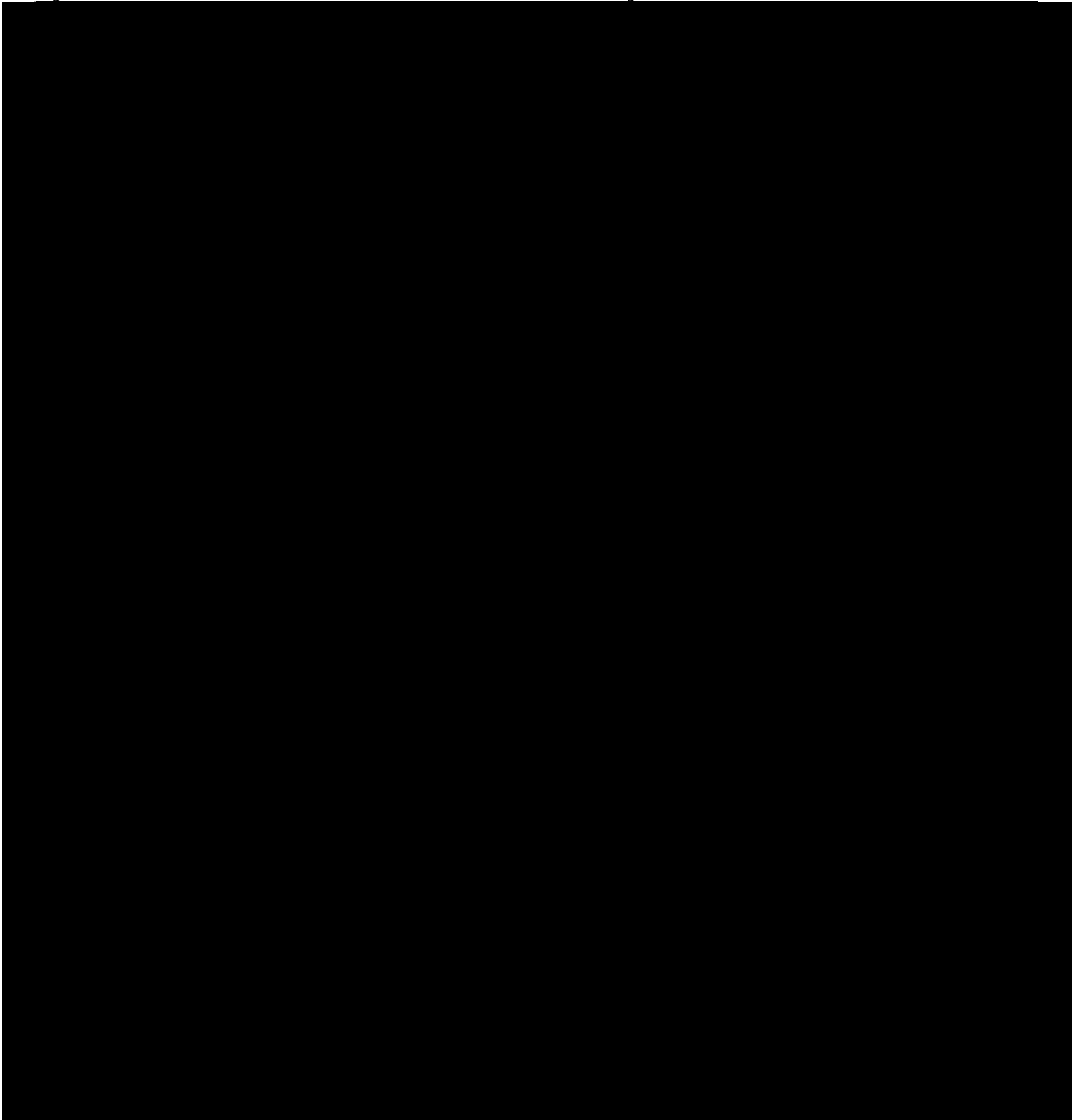
Organization

Yr Medical

Vision & Hearing

Continuation on Death

Monthly Retiree
Contributions



Ontario Power	13	Same as active	Active vision & hearing	Continued to spouse for lifetime	None
---------------	----	----------------	-------------------------	----------------------------------	------

Same as active	Continued to spouse for lifetime	None	--	Health care: Age 55 & 10 years or 25 years Dental: Age 55 & 10 years or 25 years
----------------	----------------------------------	------	----	---

Time Off With Pay

----- Weeks of Vacation by Years of Service -----

Organization	Employee Yr. Group	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Ontario Power	13 Salaried	2.0	2.0	3.0	3.0	3.0	3.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0	5.0	5.0	5.0	5.0	5.0

22	23	24	25	26	27	28	29	30	31	32	33	34	35	Vacation Description	Holidays	Special Provisions
5.0	5.0	5.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		11.0 + 3.0 floating days	Plus additional 1 day's pay x service over 25 years (maximum 10 days' pay)

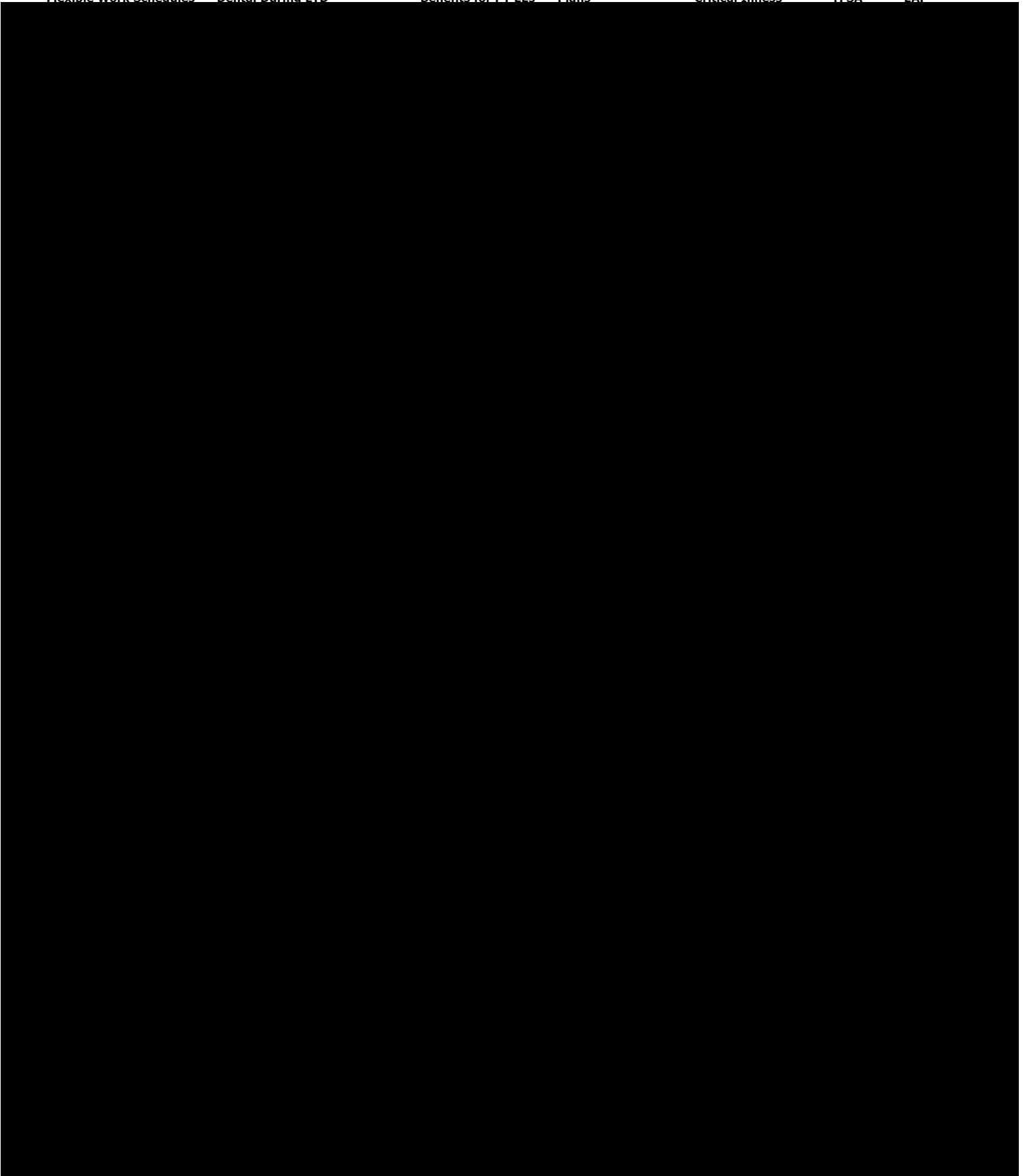
Miscellaneous

----- Overview of Flexible Benefits -----

Organization	Employee Group Covered by Yr. Flexible Program	Annual Employer-Provided Flexible Credits	Health Account	Unused Flexible Credits
--------------	---	--	-------------------	-------------------------

Ontario Power	13	--	No flexible credits provided No wellness credits provided	--
				None

Flexible Work Schedules	Continuation of Medical/ Dental During LTD	Health Care Benefits for PT FFs	Maternity Sub Plans	Critical Illness	TESA	EAP
-------------------------	---	------------------------------------	------------------------	------------------	------	-----



Flextime, Job-sharing, Part-time	Full coverage for entire period of disability at no cost to employee	Working 27.0 hours per week	First 2 weeks, 93% of pay, then next 15 weeks, Top-up to 93% of pay	None	No	Yes
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ONTARIO POWER GENERATION

Benchmarking Report on Contracts Strategy and Overhead & Profit Levels for Large-Scale International Projects

17 Nov 2010

Prepared for
**OPG – Darlington Nuclear Refurbishment Program
Re-Tube & Feeder Replacement Project**

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Disclaimer

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REV	DESCRIPTION	ORIGINATOR	REVIEWER	F+G APPROVAL	DATE	CLIENT APPROVAL	DATE
0	Survey Results	CJ	JH	TG	11/05/10		
1	Survey Results	CJ	JH	TG	11/15/10		
B	Survey Results	CJ	JH	TG	11/16/10		
C	Survey Results	CJ	JH	TG	11/17/10		

Benchmarking Report on Contracts Strategy and Overhead & Profit levels for Large-Scale International Projects

1 Background

As part of the investment strategy announced by OPG on February 16, 2010 for its nuclear assets in the Durham Region in Ontario, Canada, OPG has proceeded with the definition phase for the mid-life refurbishment of the Darlington Nuclear Generating Station (DNGS) located on the shore of Lake Ontario in the Municipality of Clarington, Ontario, Canada.

The Darlington Refurbishment Program will consist of a number of large and small projects and OPG is in the early stages (Definition Phase – Preliminary Planning) of assessing the feasibility of refurbishing the Darlington facility in order to operate the facility beyond the current predicted end of life.

The Reactor Re-Tube & Feeder Replacement Project is one of the main elements of the Darlington Nuclear Refurbishment program. The scale of the Contract Scope & Value and associated complexity and difficulty represent a considerable challenge for both OPG and the capabilities of the Contractors.

OPG had already made significant progress in the development of the overall Contract Strategy and in particular for the R&FR Project, prior to Faithful+Gould's involvement, based on previous studies that had been commissioned for other OPG projects and the market knowledge of the project supply chain team assembled from both within and outside of OPG. The initial strategy is summarized below.

1.1 Refurb Preliminary Contracting Strategy – December 17th, 2009

The Refurb Program Team developed an overall preliminary procurement and contracting strategy that was published on December 17th, 2009. The overall Refurbishment Program was broken down into several work packages to facilitate contracting with third parties.

A Scope of Work Study was commissioned for each package and R&FR Study was completed in December, 2009. The Contract Strategy is also based on OPG providing oversight of the Contractors who would be required to be in place to support the development of the Release Quality Estimate in December, 2014.

The initial Contract Strategy for the R&FR project, due to the nature and complexity of the work and the uncertain nature of scope, cost and schedule, followed the recently popular “partnering” approach where the right partner with the most appropriate skill set would be engaged in a collaborative approach rather than via a procurement process.

Other options were considered and the reason for these options not being selected are stated below:

- Self-Perform – OPG does not have all the required capability in-house
- Traditional EPCM – Loss of benefit of early contractor involvement
- EPC Design / Build – Loss of OPG control of project
- Turnkey – Work cannot be isolated, Scope will be flexible due to discovery

The initial partnering approach assumed an single overall Target Cost, under which, there were various pricing mechanisms and, against which, the Contractor would share pain / gain for actual under-spend or over-spend.

1.2 Current Development of RF&F Strategy & Key Term Sheet

The above strategy has since been modified to adopt a "Hybrid" Type Contract where risks are allocated as appropriate through various pricing mechanisms and objectives are aligned through the Contractor being responsible for performance as a whole and sharing pain / gain against that performance.

The contract pricing mechanisms are essentially as per the initial strategy, the Target Cost. However, this has now been limited to the separate Definition and Execution phases.

Contractor capability remains an important issue and Contractors have formed various Consortia to enable the provision of all required capability in a single contracting entity. Contractor capability is also planned to be the criteria for reducing the number of proponents to two for the RFP Stage. This will result in the RFP being a commercial decision between two competent and qualified proponents.

The RF&R Procurement Team has therefore developed a Key Term Sheet that summarizes the hybrid approach and all key commercial issues and the pricing and incentive mechanisms OPG would prefer to see implemented as part of the R&FR Contract. The intent of the Key Term Sheet is to establish the capability and willingness of the Contractors to engage in this type of contract prior to formal issue of the RFP and avoid possible lost time.

OPG was also concerned that they needed to be aware of market levels of Overhead & Profit prior to negotiation of these issues with Contractors in the development of this contract. Faithful+Gould has, therefore, been commissioned to provide support in the development of the Contracts Strategy for this element of the project. As part of this role, Faithful+Gould has been requested to provide a Benchmarking Report which provides a peer review or sense check for the strategy adopted to date.

Faithful+Gould has, therefore, developed this Benchmarking Report based on what contracting strategies have been employed by major programs facing similar challenges and the typical levels of Contractor Overhead & Profit experienced when these Contracting Strategies have been employed.

2 Purpose

The purpose of this Study and Report is to provide the OPG Darlington Nuclear Refurbishment Program with a benchmark across multiple energy sectors and geographical regions on:

- The Contracting Strategies being adopted with most success by large international programs
- The applicable level of Overhead & Profit payable to Contractors where these Contracting Strategies have been adopted

It is intended for the above findings to be used as a guide for the OPG Darlington Nuclear Refurbishment Program Team in both establishing the overall Contract Strategy for the Reactor and negotiating the applicable levels of Overhead & Profit with the Contractors.

3 Benchmark Conclusions

The Study Conclusions below are based on analysis of 40 Major Programs and Portfolios of projects with particular emphasis on the Nuclear and Utility industries. The sample of projects was based on:

- International Programs and Contracts where Faithful+Gould have direct involvement
- Canadian Programs and Projects obtained via a Commission with Deloitte
- Local Framework Contracts obtained via OPG
- OPG Fossil & Hydro – although certain confidential information was not available.

3.1 Summary Benchmark against other Major Projects

In summary, the Benchmarking Analysis has confirmed that the strategy that R&FR Procurement Team is currently progressing is broadly in line with the overall contracting approach being adopted on complex long term projects:

- Contractors are being asked to manage risk where appropriate. e.g. Fixed lump sum prices are obtained where the scope is well defined and risks are known; e.g. Tooling for the RF&R Contract.
- There is a recognition from Owners that Contractors can add value to the process if they are involved early in the project process and objectives are aligned. e.g. The Definition Phase (early involvement) and Incentives for Execution Cost & Schedule Performance for the RF&R Contract.
- Recent contracts have recognized that multiple pricing mechanisms can be used for various elements with differing levels of definition and risk profiles in lieu of one pricing mechanism being force-fit for the overall contract scope. e.g. Fixed price for Tooling, Target Cost for Execution Phase, Reimbursable Cost for Commissioning in the R&FR Contract.

3.2 Variances from Benchmark

The only significant variance that the Benchmarking Study identified is that other projects surveyed have employed the practice of moving to a Fixed Price scenario for Construction once the project scope was sufficiently well defined and the Engineering and Procurement was substantially complete. The concerns associated with this approach are:

- If the Fixed Price is negotiated with the incumbent Contractor, it may well be high and still subject to Change Orders.
- If the Fixed Price is obtained from an additional Contractor there could be significant issues with coordination between Contractors and mitigation of cost and schedule, Rework and identification of source of Rework and Warranty.

With a project as complex as the Retube & Feeder Replacement, the current strategy is more appropriate as it would be a considerable challenge to move to a Fixed Price later in the project and maintain the benefits of the current strategy such as continued warranty and alignment of objectives.

3.3 Risks

The following are the main risks identified with the current strategy based on feedback from other projects that were surveyed in the benchmark Study:

- The initial risk with the current strategy is that the Scope of Work for the Fixed Price elements need to be clearly defined to avoid excessive Change Orders.
- Similarly, the Scope of Work for the Definition Phase Target Costs requires the same level of definition.
- Recent Opex from previous projects and market performance may be factors in driving the Target Cost to the upper end of the cost range.
- The agreement of the Execution Phase Target Cost at the appropriate level is crucial to the success of the RF&R Contract and will need considerable effort to establish an achievable but realistic target with the required level of accuracy and certainty.
- The Target Cost may be vulnerable to change based on previous Contractor history with OPG and the approach to change control.
- The Contractors may not provide sufficient Fee at Risk to provide an adequate pain / gain share. Similarly, OPG may not want to provide the equivalent as further funding for an incentive.
- An ill-defined scope for the Target Cost may result in the Contractor seeking Change Orders to adjust the Target Scope and cover over-spends.
- There is the possibility that the loss of Fee and other damages may result in the loss of any reason or cause for the Contractor to continue performance of the project.

The majority of these risks should be mitigated by the development of a robust Scope of Work and Target Cost and close post-contract change control of the scope and target cost.

3.4 Benchmark Findings – Contracts Strategy

For projects of this size and complexity, Owners and Contractors are generally entering into the following arrangements:

- Where there is significant risk, Owners and Contractors have sought to share risk where appropriate or Owners have accepted risks that cannot be controlled by the Contractors
- Where scope and risk were well known, Owners have sought fixed lump sum prices

Many of the surveyed projects identified the same concerns as those identified by OPG regarding the availability and capability of the workforce and it is important that these issues are addressed through the contract and incentive mechanisms.

Although there is some variation within the sample projects to suit the particular project requirements it is clear that the procurement strategy being adopted by OPG is broadly in line with the majority of the sampled projects

The Benchmark analysis also showed that:

- As projects become more complex and challenging, the Owner project team has endeavored to enter into collaborative arrangements, where objectives are aligned and risks are shared, with those Contractors who can offer meaningful benefits to the project. Refer referenced article from the UK's main Construction Magazine, Procurement: Target Price Contracts" published November 5th, 2010, and RICS "Contracts in Use Survey" published March 2010, (Refer pages 32 & 40 for levels of use at Target Cost) included as Appendices A.1 and A.2
- As resources and capability have become scarce and the ability to successfully perform projects has become a challenge, Contractors are unwilling to accept any unnecessary

risk. Where Contractors have absorbed Productivity Risk the Fee premium has been significant.

- Continuous Contracts, where Contractors are incentivized to improve, have been assessed as most beneficial over a program of multiple projects carried out over a number of years when the benefits of knowledge transfer can be realized.
- As collaborative contracts have progressed, Owner Project Teams have sometimes chosen to follow the more traditional fixed price contracting route once the scope and risk profile have been firmed up.

The above has resulted in Performance Contracting (e.g. Target Cost) and “Hybrid Contracts” (a mix of pricing mechanisms required to allocate risk where best placed for different project elements) now being adopted by most of the large complex projects or portfolios of programs addressed by this study. These types of contracts have been particularly prevalent in:

- ***US & UK Nuclear Industry – Over 75% of the New Build Projects or Contracts reviewed, the only exceptions being the New Brunswick and Quebec Power Contracts***
- ***UK Utility Industry & USA Infrastructure Industries have also readily adopted Target Cost Contracts to encourage performance improvement and cost predictability across portfolios of similar projects.***

The above conclusions are discussed in greater detail in Section 4 – Summary of Contract Strategy Findings

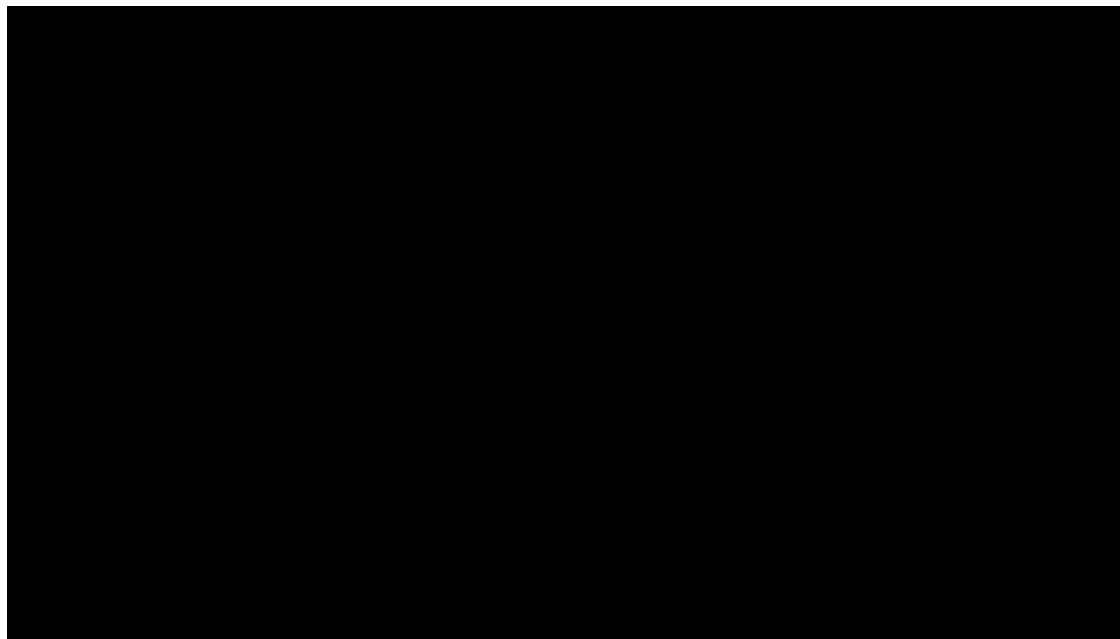
3.5 Benchmark Findings - Levels of Corporate Overhead & Profit

For the purposes of this study:

- **Corporate Overhead** - is the level of contribution each of the Contractor's business Unit is required to make to cover Corporate Costs such as Corporate Marketing, Offices, Investment and Business Development.
- **Profit** – is the profit contribution each of the Contractor's Business Units is required to make to meet the profit requirements of the overall Business and Shareholders.
- **Overall Mark-Up** – is the combination of the above 2 cost elements.

Overhead or Indirect Costs attributable to the Contractor's individual Business Units such as Offices & Supplies, Computers, Software and Communication and Small Tools and Consumables are not included in this analysis.

The overall ranges of Overhead, Profit, Overall Mark-Up, Material Mark-Up and Fee at Risk and the associated mean average and mode (highest frequency) for each category are shown in the following chart:



3.5.1 Overall Mark-Up, Corporate Overhead & Profit

The above chart shows the range for Overall Mark-Up is wide due to heavy high-end influence from local engineering contractors. However, the corresponding ranges of Corporate Overhead & Profit are relatively close and the average of each of these categories tends to support the average of the overall Mark-Up:

Cost Element	Mode	Mean
Overall Mark-Up		
Overall Profit		
Overall Corporate Overhead		

3.5.2 Material Mark-Up

The range for Material Mark-Up is relatively high and is weighted by Engineering Contractor's Mark-Up on general materials. The Mark-Up for general construction materials can be stated as two different levels:

- Mark-Up for Materials procured by Contractor [REDACTED]
- Mark-Up for Materials procured by Contractor acting as Owner's Agent [REDACTED]

The reduced Material Mark-Up is obtained by the Contractor acting as an Agent for the Owner and the Owner paying costs directly, thereby avoiding the profit that would be attracted by routing through the Contractor's Financial System. Where this approach is adopted, Owners should ensure that the appropriate warranty and liability protection is maintained.

3.5.3 Variances by Project Element

The Benchmark Study showed that each of the project elements such as Engineering and Construction may be carried out by different partners in a consortium or by different business

units of a company and that as work becomes more specialized, a greater proportion is being sub-contracted to specialist sub-contractors.

Different levels of Overhead & Profit therefore may be established for each project element. These can be broken down into the following elements for which the mean average values of Overall Mark-Up are stated below:

Project Element	Overall Mark-Up
Professional Services	
Supply and Sub-Contracts	
Direct Construction Labor	

It should be noted that the "Supply & Sub-Contract" Mark-Up of [REDACTED] above is skewed by local data and the Nuclear Industry's application of Overhead across all revenue. Faithful+Gould's general experience is that this particular mark-up should be at a level of [REDACTED]

The above summary benchmark information is discussed in greater in Section 5 – Analysis of Overhead & Profit Levels.

3.6 Protection & Incentives

Where Owners have performed large and complex projects, they have generally been required to establish greater protection to meet requirements of Financing Organizations. This has been achieved via:

- Maximizing the Fixed Price elements of the Project where possible
- Risk Sharing for issues such as Productivity – Target Cost and Fee at Risk

The above has resulted in the "Hybrid" type Contracts discussed in Section 4.3 below. These Contracts have also included several protection and incentive mechanisms designed to drive performance, for which benchmarks are shown below.

It should also be noted that the study has established that increased levels of Protection sought by the Owner, although possibly accommodated by the Contractor, will result in higher cost being passed on to the Owner.

3.6.1 Fee at Risk

Fee at Risk is generally used to provide protection against cost overruns beyond the Target Cost, to the extent that all of the Fee at Risk can be eroded. This is generally balanced with an incentive where the Contractor can earn additional fee (usually equal to the Fee at Risk Value) for under-running the Target Cost

The chart included in Section 3.5 above shows that Contracts have previously accepted approximately [REDACTED] in Nuclear and Utility projects.

Faithful+Gould's direct experience is that Contractor's generally require to be guaranteed a Profit Level of [REDACTED] and some Owners have also stated or prescribed this level in major framework contracts.

The above benchmark of [REDACTED] profit in Section 3.5, coupled with the above-identified required minimum profit level of [REDACTED] supports the view that the acceptable level of Fee at Risk is [REDACTED]

3.6.2 Liquidated Damages and Incentives for Schedule Performance

Liquidated Damages have generally been established to offset only a portion of the losses that the Owner would incur due to a delayed completion. These losses are generally significant and Contracts generally only include a level of Liquidated Damages that contribute a portion of the total loss or at least cover Financing Charges.

Liquidated Damages for Schedule have taken the form of an agreed \$ amount per day for the loss of production of an individual unit, with the overall Liquidated Damages being a stated % of the Contract Value for the same individual unit.

- The \$ Amount / Day has ranged from \$250,000 to \$500,000 for Major Programs
- The % Cap for Liquidated Damages has ranged from 3.33% to 10%
- The 3.33% referenced above is an outlier and the % cap has generally been based on the duration required to be covered, resulting in a range of 10 to 20% of Contract Price.
- Where Schedule Incentives have been put in place for early completion, this has usually been at a level of 50% of the \$Damages / Day Value and up to a cap of 2% of the Contract Price for the relevant Unit.

3.6.3 Performance Guarantees

This is one of the key Protection elements sought by Financing Organizations from Owners. For New Build Nuclear Facilities, Performance Guarantees have been established at \$3 Million / MW. The Cap for Performance Guarantees is generally in the range of 15 to 20%.

3.6.4 Parental Indemnity

For Nuclear and Major Programs that have the above forms of protection, Owners have regularly sought and Contractors have provided a Parental Indemnity or Guarantee. The Contracts reviewed do not state a value or cap, they request that a Parental Indemnity or Guarantee is provided to cover the liabilities that the Contractor is assuming.

Where Contractors have no "Parent", the Parent Company of the major consortium member has also been requested to provide Parental indemnity for the liabilities of the Contractor with no "Parent". This has been obtained, but at a significant additional cost.

3.6.5 Letter of Credit

The Projects & Contracts reviewed as part of this study have generally included a Performance Bond and a Retention Bond in lieu of a Letter of credit. The Performance bonds are generally "on-demand" Performance Bonds that can be called on in case of Contractor Insolvency or in the case of not renewing a Bond. For other events, the Owner would need to submit an authorized legal decision to support the call on the bond.

- Performance Bonds were in the range of 5% of Contract Price
- Retention Bonds were in the range of 2.5% of Contract Price

3.6.6 Warranty

General Warranty Terms have been applied for 2 years after Commercial Operation or Grid Synchronization or to first re-fuel, whichever is the shorter. Where replacement or correction has required a further 1 year Warranty has generally been made available for those affected elements.

Extended Warranties have also been made for available for Critical Equipment or Elements for durations as long as 10 years or for the life of the plant. Where these warranties have been made available, Contractors have stated the additional cost required.

3.6.7 Limit of Liability

Contractors often require their overall liability to be capped so that they are not vulnerable to all the contract protection issues impacting them together to a level that could well approach the overall Contract Price

Limits of Liability are generally stated as a % of the Contract value for an individual unit. The levels of limit of Liability have ranged from 10 to 40% of Contract Price for an Individual Unit. A premium was paid to obtain the 40% Limit. A more typical range would be 20 to 25%.

The % applied is also affected by the overall project value and most of the examples were at a higher value being new build nuclear projects. It should also be noted that all the benchmark examples were also designed to be high to accommodate performance guarantees within the limit. This level may not be required where the Contractor is unable or unwilling to guarantee performance or where performance cannot be measured.

The above Protection and Incentives Mechanism are discussed in greater detail in Section 6 – Analysis of Protection and Incentives in Contracts.

4 Summary of Contracts Strategy Findings

The review of current programs has identified the following general trends and developments in Contracting Strategies employed in the Energy Sector.

4.1 Fixed Price

The conventional power industry has traditionally employed a Turnkey EPIC Firm-Fixed Price approach for major projects where:

- The Contractor is responsible for Engineering, Procurement, Installation and Commissioning
- This scope is carried out for a Fixed Lump Sum Price

The main drivers for the above contract strategy were:

- The projects were relatively straightforward “cookie-cutter” type projects that Contractors had carried out repeatedly in the past.
- The Utilities need to establish the required electricity selling rate with the public in advance of the project drove the requirement to obtain cost certainty by placing all of the risk with the Contractor and covering it with a Fixed Lump Sum Price.
- Review of the Fee Structure for these types of Contracts has indicated that Contractors incorporate significantly increased fees to provide contingency required by the Contractor to absorb the risks passed to them via the Contract.

There have been recent projects such as the \$2.3 Billion Oak Creek project, which incurred a \$500 Million dispute between Owner Wisconsin Energy Corp and Constructor Bechtel that was the result of permitting delays, labor productivity and associated increased costs. This dispute was settled for \$72 Million and an Extension of Time.

Disputes such as these are causing Owners to be concerned that they continue to be exposed to risks they anticipated were covered by the original Fixed-Price Agreement. This is common where scope is not well defined, or when these risks become too great for the Contractor to absorb.

There have also been recent attempts in the Canada Nuclear and Power Generation (generally) Industries to utilize Lump Sum or Fixed Price Contracts at New Brunswick Power and for OPG – Both the Niagara Tunnel project and Darlington Nuclear New Build. The New Brunswick Power and Niagara Tunnel Projects are significantly over budget and the Darlington New Build Project found that the market could not accommodate a Fixed Lump Sum approach for a \$Multi-Billion Multi-Year Program and the inherent risks and uncertainties.

4.2 Reimbursable – “Time & Material”

Other elements of the Energy Sector such as Upstream Oil & Gas Exploration and Production and Downstream Refining & Chemicals have been engaged on more complex and challenging projects. The Upstream industry has faced more remote and challenging extraction locations and the refining industry has been required to both comply with environmental requirements and develop products that meet higher environmental standards.

The complexity of these projects has lead to the development of a Contracting Strategy where:

- Owners have formed alliances with certain Contractors in order to benefit from knowledge transfer and lessons learned.

- Contractors are reimbursed on a Time and Material basis for all aspects of the Project and therefore do not carry any risk or protection in return for a lower level of profit.
- A collaborative integrated team approach has been adopted in order to mitigate the risk faced by the Owner.

Although this strategy has lead to predictable performance, benchmarking of productivity in capital and maintenance / shutdown activities has established that actual performance has decreased significantly over a number of years. This has been highlighted in recent Canadian Oil Sands Projects and USA Refinery Revamp Projects for Canadian Oil, where budgeted costs and actual costs increased considerably as a result of the high demand on resources and the unexpected reduced productivity.

4.3 “Hybrid” Contracts

The Nuclear Sector has recently seen a significant increase in project activity as both new-build nuclear projects and nuclear refurbishment projects have become necessary on a global basis to prolong the life or replace the current ageing nuclear facilities.

The industry is facing the following challenges:

- Nuclear Projects have not been executed in the relevant markets / economies for a number of years and there is a shortage of experience and skill-set and a general lack of confidence in the ability to perform these projects successfully.
- Multiple projects are being progressed concurrently placing increasing pressure on the capability of Suppliers.
- Financing Organizations, due to current economic climate and regulatory nature of market, are seeking cost certainty.
- Governmental pressure to complete projects on schedule via the award of production tax credits.

The above has resulted in Owner and Project Teams adopting the following project execution and contracting strategies in the USA:

- Unistar is a Joint Venture comprising traditional Owners Constellation Energy and EDF, Technology Providers Areva, Designers & Constructors Bechtel. This has now been deferred due to the Financing Cost associated with the project
- The South Texas Power project is owned / funded by NRG and has contracted with Toshiba who have taken some equity stake and entered into a Firm Price (subject to escalation) contract in order to enter the USA Nuclear Market. The Construction Contractor Fluor is on a reimbursable type basis.
- Other approved Nuclear New Builds - Southern Company's Vogtle and the Scana Project are both with Shaw (including Westinghouse) where Shaw has been appointed as EPC Contractor on a Target Cost basis.
- Exelon also negotiated a Hybrid Contract for a Nuclear New Build in Texas and have just secured environmental permits.

The Firm Price project has already been highlighted as incurring \$ 4 Billion Cost Overruns <http://www.powermag.com/POWERnews/2409.html> and the project is on hold.

The Vogtle Target Cost Contract is progressing and the Exelon project is in “ready” state with a committed contract but awaits further funding opportunities.

The above highlights the challenges of long term Nuclear Programs and how a Firm / Fixed price approach can burden the project to the point that it is no longer viable. The Target Cost projects have allocated risks to the Owner where appropriate, such as Escalation and Currency Exchange, and continue to progress.

4.4 Division of Responsibilities

4.4.1 Client Role

On most of the projects surveyed the client took responsibility for oversight, obtaining regulatory approvals and general stakeholder communication across all phases of the project. During the design phase the client performed the role of Project Manager on 83% of projects. However, they performed this role on only 20% of projects during the construction phase.

The client generally undertook an oversight and approval role for major equipment and bulk materials procurement and on only one project was the client identified as the procurer of these services. However two of these project utilized framework agreements already in place with the client for major items.

4.4.2 Contractor Role

The contractor undertook an overall EPC role, including the development phase on 50% of projects. However this increased to 83% of projects during the detailed design and engineering phase. During both of these phases the contractor was typically paid on a reimbursable basis with one project also incorporating an incentive mechanism.

The contractor was responsible for procurement of major equipment on 50% of projects and for procuring items through pre-existing framework agreements on a further 33% of projects.

4.5 Analysis of Risk Sharing in Contracts

Further detailed analysis of Section 5.2 below shows that Contractors generally require significantly higher levels of Overhead and Profit when requested to absorb all risk. Contractors have also often declined to accept responsibility for Risk when requested by Owners, particularly in the Nuclear Sector.

Owners and Contractors have therefore, in several recent agreements, attempted to allocate risks to the party which has the greatest ability to manage that risk. Owners have also recently recognized that there may be more value in Owners accepting risks that are outside the controls of both the Owner and Contractor, than in paying the Contractor a premium to absorb those risks.

Risks that Owners are typically absorbing include:

- Escalation – Managed via published Escalation Indices for the relevant industry
- Currency Risk – Offset by Currency Hedging
- Regulatory Risk – Impacts of revised Government Legislation affecting Project Scope or Contractor Costs
- Insurances – Owners are increasingly using “Owner Controlled Insurance Policies” on major projects where justified by economics

Risks that Owners are typically requesting Contractors to absorb include:

- Productivity
- Design Errors & Omissions and Construction Rework

- Overhead Cost Variances

The level of Overhead & Profit varies with the level of risk allocated to the Contractor. For larger long term programs, Escalation and Regulatory risk in particular are outside the control of the Contractor, and Owners have generally absorbed these risks in order to avoid excessive levels of Overhead & Profit.

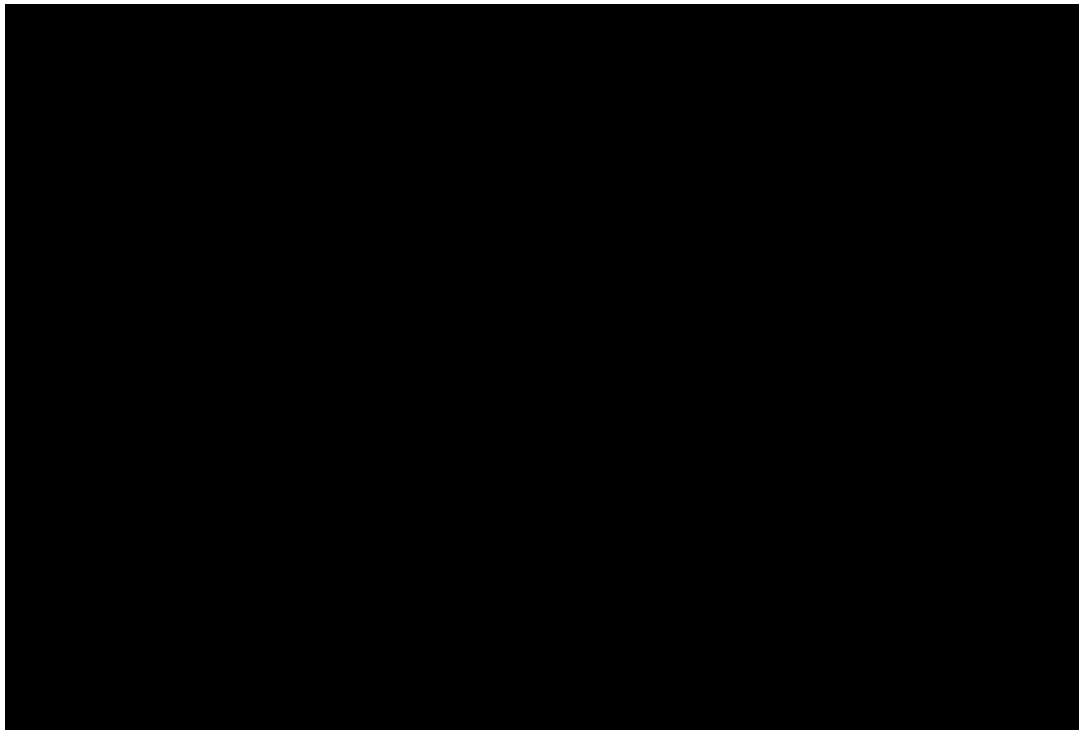
5 Analysis of Overhead & Profit Elements

Levels of Overhead & Profit were established from a sample of 36 projects or finalized contracts which were grouped in the following categories:

- Nuclear
- Local – Engineering and Construction
- Other Major Programs – Power, Oil & Gas, Pharmaceutical, Utilities, Infrastructure

5.1 Overall Mark-Up Levels

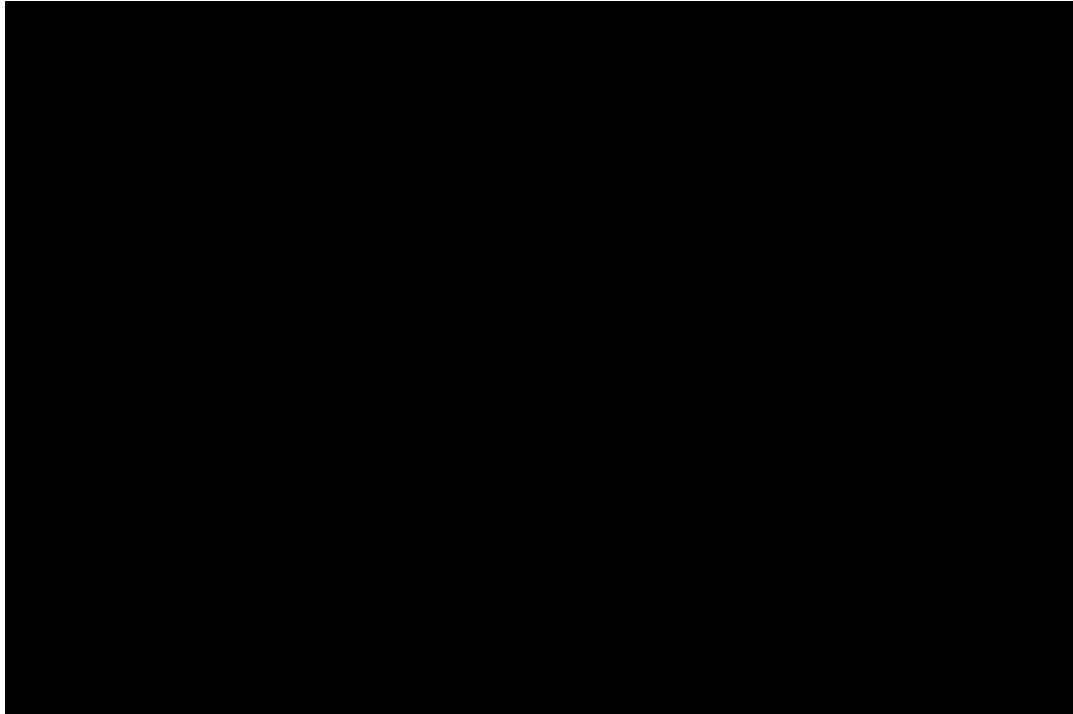
The most available data was for Overall Mark-Up (Overhead & Profit combined) and ranges and averages for each of the above-referenced groups are shown below:



The above Chart shows that the average overall Mark-Up for Nuclear and Other Major Programs is approximately [REDACTED]. However, the both Local Construction and Engineering Contractors appear to require much higher Mark-Ups at [REDACTED] and [REDACTED] respectively.

5.2 Corporate Overhead Levels

The Corporate Overhead levels were the most challenging to establish due to Contractors often stating profit only and varying definitions from contract to contract on what Corporate Overheads comprised. The range of established Corporate Overhead levels are shown in the Chart below:

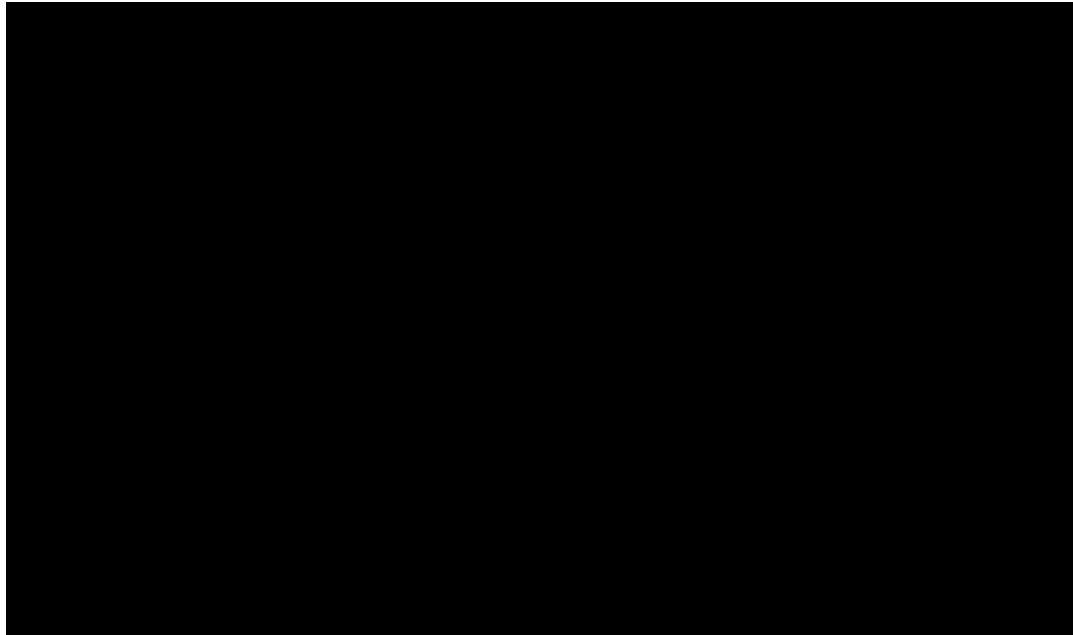


The above chart shows that Corporate Overhead may fall in the range of [REDACTED] to [REDACTED] generally and that [REDACTED] to [REDACTED] may be more applicable for the area local to the project.

The analysis also identified that Contractors were becoming more familiar with an “Open-Book” approach to levels of Overhead and Profit and re-calculated their Corporate Overhead as a % of Total Cost on an annual basis and were open to the same adjustments being incorporated in the contract. Contractors were also open to annual adjustments to corporate overhead being subject to audit.

5.3 Profit Levels

The profit information was the most available as this is often stated separately in most contracts. The ranges and of profit and associated average profits for each of the study groupings are shown below:



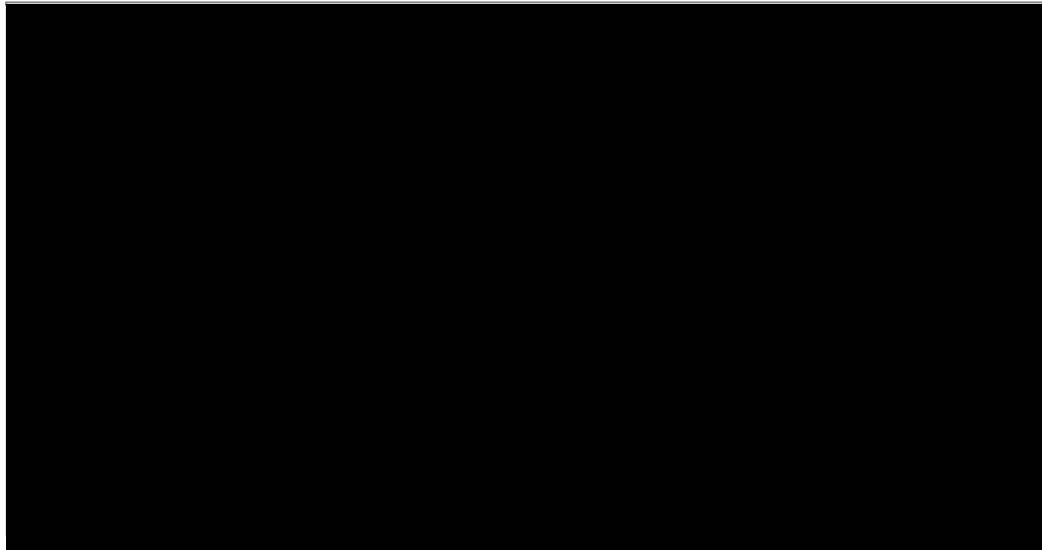
Although there was a high availability of data, the study has not identified a consistent trend across all study groups. The above chart shows that Nuclear Projects / Contracts demand a greater level of profitability than Other Major Programs and that Local Contactors require an even higher level of profitability.

The local profit levels are generally applicable for smaller projects. A more appropriate benchmark for major programs would therefore be the Mean Average Nuclear Profit Level at approximately [REDACTED].

5.4 Material Mark-Up

The following chart shows that that Mark-Ups for material is [REDACTED] to [REDACTED] higher in the Engineering & Installation Framework Contracts in the local market.

Analysis of the Mode shows that the range for Materials Mark-Up is between [REDACTED] even when local Construction framework contracts are taken into account.



The low end of the range [REDACTED] to [REDACTED] indicates that a lower level of mark can be obtained. The low mark-up levels are dependent on:

- Size of program
- Protection required from Owner – e.g. Warranty
- Payment Methodology – avoiding funds routed through Contractor

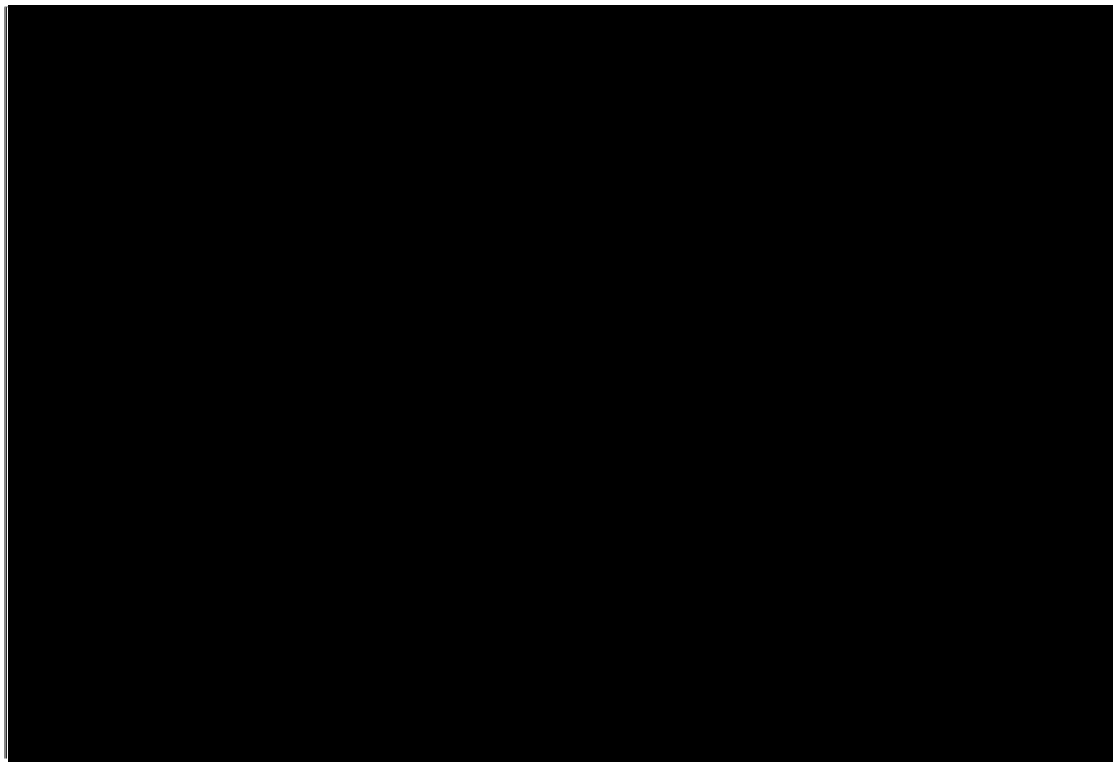
The above Material Mark-Ups were also generally used to determine Mark-Up Levels for Sub-Contracts.

6 Analysis of Protection and Incentives in Contracts

As Programs and Projects have become larger or more expensive, the requirements for both Cost Certainty and Protection from Financing Organizations and Government Regulators such as the USA DOE have increased. Contractors have generally been able to respond to these increased requirements, however, the cost of these increased protection measures are generally passed onto the Client via increased fees or even pass-through reimbursable charges.

6.1 Fee at Risk

The Chart below displays the range of Fee at Risk that has been identified in the Target Cost Contracts contained within the Sample Study



The Fee at Risk has generally been obtained on the Installation / Construction element of the project and Contractors are reluctant to place any Fee at Risk on Engineering or Material Supply. Additionally, Contractors have been reluctant to accept certain risks such as productivity in Nuclear islands.

This could result in the Fee at Risk being a much lower percentage of the overall contract value.

Owners generally view the Fee at Risk as a fund that the Contractor is providing to develop a buffer of protection against cost overruns. However, Contractors also generally seek a balanced approach which would mean the Owner may need to fund a further amount equivalent to the Fee at Risk as a reward for Savings opposite the Target Cost.

Contracts therefore also included relatively complex methodologies that were designed to ensure an accurate and fair Target Cost, and a sharing of Cost Overruns and Under-runs to protect against the Contractor benefiting excessively from the Fee at Risk Mechanism.

6.2 Liquidated Damages and Incentives for Schedule Performance

The Nuclear Industry has generally accepted that the Damages in terms of Revenue Loss and other Consequential losses would be too great for Contractors to cover to full, in the event they were responsible for a delay to the overall Commercial Operation Date. e.g. The Replacement Power Cost for New Brunswick Power has been reported as \$1 Million / Day. Owners, therefore generally seek to recover Interest or Finance Charges at least and a contribution to the Revenue Loss.

The review of the Point Lepreau project stated that caps for Liquidated Damages for Schedule have traditionally been in the range of 25 to 50%. However, historically, these % cap levels would have been applied to projects in the Hundreds of Millions range (as per new Brunswick Power) rather than \$Multi-Billion programs of work.

Benchmarking of \$Multi-Billion Nuclear Programs has identified a Liquidated Damages range of \$250,000 to \$500,000 per Day for each Unit being accepted by Contractors. The Maximum Cap accepted by Contractors for these damages have generally been in the range of 5% to 20% of the Contract Value of each Unit,

Application of a Percentage Cap at the higher end of the range would result in Damages continuing for multiple years. I.e. If a Liquidated Damage of \$500,000 / day is assumed with a Maximum Cap of 10% of Unit Contract Price, this would result in Liquidated Damages being applied for a duration of over 1,000 Days, i.e. 3 Years.

Nuclear Contracts also generally allow a gradual introduction of Liquidated damages as the schedule is generally long and uncertain and a delay of say 2 weeks on an overall schedule of 3 years represents a 1.33% error.

For a maximum of \$500,000 / Day, the typical incremental increase would be:

- \$300,000/Day for first 30 Days
- \$4000,000/Day for 31 to 60 Days
- \$500,000 /Day over 60 Days

Liquidated Damages have therefore typically been set at a level that will provide some contribution to damages incurred by the Owner, with a maximum of \$500,000/Day. The cap has then generally been established by assessing the number of required days coverage at the \$ Damages / Day. The maximum limit being established as 10%, or 3 years coverage.

6.3 Performance Guarantees

Performance Guarantees were included in New Build Nuclear Contracts at a high level where the Owner required protection against the Technology Performance or the capability of the Contractor to deliver a reliable product.

Performance Guarantees for these Contracts were established generally at a level of \$3 Million / MW, with the Cap for liability for Performance Guarantees being as high as 20%. The cost for provision of a Performance Guarantee for this level of coverage and for this type of technology challenge would be significant and would be passed on to the Owner via the overall fee.

Where the technology is very well known, Contractors have no difficulty providing Performance Guarantees. Similarly, where Performance Guarantees are set at the above high level for a relatively new or complex technology, Contractors are also reluctant to guarantee Performance at a level above what they believe to be a conservative estimate.

6.4 Limit of Liability

The levels of limit of Liability for Nuclear New Build Contracts have ranged from 20 to 40% of Contract Price for an Individual Unit, with the majority of Contracts having a range of 20 to 25%. The above ranges appear to be set a level that is raised enough to cover both Schedule Liquidated damages and Performance Guarantees.

Where other Non-Nuclear Contracts have Limits of Liability these have been as high as 50%. This high level is again due to high performance Guarantee requirements and Schedule Liquidated damages for a much lower range of project values.

The sample does not include a Limit of Liability that is not required to cover Performance Guarantees. It is anticipated that the Limits present in the sample would be reduced by approximately 30% if a Performance Guarantee was not required.

This would result in a typical range of limit of Liability of between 15% and 20%.

6.5 Other Protection Items

There was no further statistical data for the following Protection Issues and therefore the relevant information for these issues has been included in Benchmark Summary Conclusions Section 3.3 Protection & Incentives.

- Parental Indemnity
- Letter of Credit

7 Approach / Methodology

7.1 Survey Methodology

The Survey Sample originally employed for the Major Programs comprised:

- Major international programs which Faithful+Gould have direct involvement with.
- Canadian Major Programs obtained via Deloitte
- Local Contract Information obtained via OPG
- OPG Major Fossil and Hydro Projects – although some information was confidential

7.2 Major Programs

Each Faithful+Gould Program Team was issued with a questionnaire – Attachment B.1 requesting details on:

- Program Value and Schedule
- Program Drivers, Constraints, Risks and Mitigation Plans
- Owner & Contractor Role
- Compensation Mechanism & Associated Overhead & Profit Levels

Examples of applicable contracts were also provided to support analysis and the development of the Term Sheet.

7.3 Profile of Major Programs Surveyed

The survey results produced eight samples from programs covering four major industry sectors; Nuclear, Oil & Gas, Utilities and Manufacturing and from the geographical regions of the UK, Africa, North America and South America. The range of projects was as follows:

- Values between \$15M and \$12Bn with an average project value of \$3.8Bn.
- Planned project durations ranged from 43 months to 120 months, averaging 68 months.
- Key project drivers as being replacement, upgrade and expansion.
- All are ongoing or recent programs with three of the projects planned to commence in 2009, one in 2007 and two in 2005.

7.4 Deloitte – Overhead & Profit

In addition, Faithful+Gould contracted with Deloitte & Touche to obtain Project Performance and Overhead & Profit information for a further eight major projects. Faithful+Gould also reviewed the information provided with Deloitte & Touche to ensure understanding of the basis of information.

The Deloitte Survey was more focused on cost elements such as Overhead and Profit. Deloitte were also asked to complete a consistent template an example of which is attached as Appendix B.2. Definitions for the categories of cost in this form were also developed and are included as Appendix B.3.

7.5 OPG Project & Contract Information

Contract information was provided on a confidential basis by OPG Nuclear Procurement via the provision of extracts of each contract. Contracts were selected for applicability, as some were for minor services.

Information from other OPG Fossil and Hydro projects, to the extent that it was available, was provided by OPG's capital investment group. However, this information was very limited due to confidentiality concerns.

7.6 Analysis and Report

Once the Surveys were returned, the Survey Team reviewed the information with the relevant Program Team to ensure full understanding.

Information was then collated into similar project cost categories and statistically analyzed to develop ranges and trends for information obtained.

The results were also incorporated in an overall comparison report detailing Contracts Strategy, Cost Elements and Protection Measures.

Trends and variances were also studied in order to provide understanding and reasons and for variances and further support for conclusions.

This report was then developed detailing the statistical analysis for cost elements, and providing benchmarks for Contract Strategies, Cost Elements and Protection Issues.

8 Appendix A – External Contract Articles / Surveys

Procurement: Target Price Contracts

In today's overheated market, clients need all the help they can get to deliver good-value, low-risk projects. Some clients are turning to collaborative working – and contracts such as the NEC – to provide an extra incentive. Simon Rawlinson of Davis Langdon examines the issues



01 Introduction

Construction is a high-risk activity and much effort has been focused over the years on eliminating this risk. Studies, such as Improving Public Services Through Better Construction by the National Audit Office, suggest that many of these initiatives, which are often focused on transferring rather than managing risk, reduce contractors' motivation and performance.

Even so, many clients continue to transfer risk to contractors through design-and-build contracts, arguably giving contractors greater control over projects. The latest RICS Contracts in Use survey indicates design-and-build procurement accounts for more than 43% of the market.

As risk transfer to the contractor does not necessarily improve the project outcome, there are many initiatives focused on business improvement, particularly on enabling participants to collaborate effectively. These include:

- The development of information exchange standards and processes to help project teams to promote effective, information-enabled collaborative working
- Financial arrangements such as insurance liabilities. Single project insurance policies, covering all project risks, are intended in part to help eliminate sources of unproductive and risk-averse working practice by project participants motivated by the need to manage their design-related insurance liabilities on an individual basis
- Contractual arrangements, including standard partnering contracts such as PPC2000 and the recently launched JCT Constructing Excellence contract.

Procurement policy is especially important for public sector clients, who must set high standards as employers, be accountable to the public and deliver best value.

02 NEC contracts and co-operative working

The NEC exemplifies many aspects of co-operative working. The target cost options allow public sector clients to provide off-the-shelf incentives, and back this up with systems that allow for performance payments within a framework of accountability.

The NEC promotes many aspects of co-operative working, including:

Focusing the whole team on delivery

Equal sharing of risk

Managing risk rather than transferring it

Continually assessing cost, time and quality.

Focusing the team on achieving these goals is important if the full benefits of the NEC are to be secured. However, a number of ways of circumventing its processes have emerged, through contract amendments or variable commitment to sound administrative practice.

03 Target contracts

The most widely used variants of the NEC are options C and D, both target contracts. The main difference between a target contract and a conventional contract is the mechanism for sharing risk and opportunity. While the client retains the cost and time risk linked to contractual changes, the financial effects of cost overruns can be shared between the client, contractor and supply chain. This is often termed the gain/pain share mechanism.

Target contracts are best used on well-defined projects, where the contractor has a motivation to reduce costs, rather than on projects that are loosely defined, as changes in project definition are likely to change the value of the target price.

Using this approach, equitable risk transfer is often adopted to encourage positive behaviour. That said, as contractual share of risk and gain/pain mechanism are set by the client, it can modulate its exposure to risk.

Used effectively, target contract options should give the incentive to deliver a project on time and to budget. However, if costs fall out of control, the contractor may seek to increase the target via compensation events. In this case, a greater burden of cost overrun risk may transfer to the client than intended.

As such, effective administration by the project manager and contractor is vital.

04 How a target cost contract works

Under a target contract, a contractor is reimbursed for the cost of the works, including those of subcontractors, some elements of establishing the site and the fee for the items listed in the contract as actual or defined costs. These include management costs, overheads and profit.

The contractor is contractually committed to meeting the target cost, which comprises the cost of the works described in the works information, activity schedule or bill of quantity, plus a fixed percentage fee.

The target cost and the contractor's reimbursement are not linked until the end of the project, when the gain/pain share mechanism is applied. What the contractor recovers through regular payments is the actual cost incurred, along with the percentage fee.

While the contractor is paid in accordance with a combination of lump-sum and actual costs incurred, the incentive mechanism and commitment to deliver the project on time are fixed. However, should any allowable compensation events occur that result in a change to cost or programme, the target will be adjusted by the actual cost incurred or by a lump sum, depending on how the contractor and project manager agree them.

After the project is completed, payments made to the contractor are compared to the revised target cost. Depending on the outcome, the gain/pain share mechanism agreed in the contract will come in to play.

Typically, the gain share involves splitting the amount of money saved, that is, the difference between the target cost and the actual expenditure, between the client, contractor and possibly some subcontractors.

If the project's costs exceed the target cost, the pain option is exercised. This could involve the contractor taking 100% of the liability and, as such, suffering the loss. Alternatively, the client may shoulder part of the loss.

The contractor would ideally meet the target cost, in which case it would receive full remuneration. Savings against the target would be shared with the client. The worst outcome for the client is the contractor being paid more than the revised target cost.

The difference between the target cost and the actual cost is, of course, fundamental to the incentive model.

However, the lack of a direct link during construction means there is a risk that the project team could lose sight of its target and incentive. Therefore:

- The target cost should be realistic, based on a fully set of works information. Target cost contracts are sometimes misunderstood as being incentivised develop-and-construct approaches, where a project team is encouraged to work from an outline concept to deliver a solution focused on a client's needs. Unfortunately, a project let without well-defined works information resulting from incomplete design development is highly likely to require substantial changes and result in compensation events and amendments to the target cost. In reality, the documentation required to support the contract will be as detailed as a lump-sum contract.
- It should be set at a level that acts as an incentive. Too low, and the contractor will recover costs by other means. Too high, and inefficient working may be rewarded.
- It should be based on a detailed programme. The target cost mechanism cannot be properly administered without considering the impact of compensation events. Without this, it is not possible to assess the responsibility for delay.
- The client must understand that it is not a lump-sum contract and should co-operate with the project manager in administering the contract. Failing to comply with timescales can lead to a client creating liabilities for itself under the NEC.
- It is important for the contractor to keep track of costs incurred relative to the adjusted cost, so its own commercial position is protected. In some cases, where subcontractors are also incentivised, this may involve the project manager and contractor in the audit of material supply invoices and labour returns, to confirm levels of expenditure.

05 Effective management and maintenance of incentives on target cost contracts

Target contracts operate by encouraging good purchasing and contract management so long as the incentive is understood by the contractor and the target remains visible.

Given the administrative demands of the NEC contract, there is a risk that the link between target and actual cost entitlements could be lost, and the client could be exposed to a significant transfer of cost risk. This exposure can be managed by the gain/pain mechanism.

There are a number of characteristics of target contracts that clients and their project managers need to manage to maintain the incentive. These include:

- Management of the information flow. The NEC workflow is extensive and complex, so a management system should be in place to support the project manager and contractor in meeting timescales and updating reports. On projects worth more than £10m, web-based extranet systems designed to support the NEC workflow are invaluable.
- Dealing with the learning curve. The cultural changes associated with incentivised contracts and the NEC are substantial. Many parties may not fully appreciate the benefits to innovation or project management.
- Use of the contract. On a JCT-based project the contract stays in the drawer unless there is a problem; under NEC the opposite applies. If the contract is not referred to regularly, problems are likely to build up.
- Rebalancing risk transfer. Some of the compensation events under NEC can expose the client to risk. Examples include the prevention event, which transfers risk of many remote events to the employer. A common but less equitable amendment deals with the impacts of poor project management performance linked to the issue of notices.
- Effective use of the contract's risk management provisions.
- Maintaining the programme. Assessment of the programme in real time is an essential element of the NEC philosophy. It is essential that the programme is kept up to date. Under the target cost option, adjustments should be based on a pre-assessment of the impact of specific compensation events. Under a typical post-hoc assessment extension of time, the pressure is to recover all the delay costs, even if some result from aspects of the contractor's management. In practice, programme impacts are often managed imperfectly under NEC with, for example, a series of compensation events being grouped together for assessment. However, as long as the assessment is kept up to date, the contractor and client will understand their position.

Other challenges include:

- Managing alternative financial motivations, such as:

Chasing turnover. As contractors are compensated, in part, by a fee, there may be pressure to increase recovery through defined costs during the contract rather than secure gain share at the close.

Optimism with regard to cost recovery. Owing to the disconnect between the contractor's costs and their entitlement under the adjusted target cost, it is essential contractors appreciate what their entitlement is likely to be and what their costs are.

Assessing compensation events in advance. The NEC gives the option for the target cost to be amended by means of agreed quotations, addressing both future cost and programme. Many clients and project managers do not feel comfortable agreeing these impacts in advance as the contractor may on some occasions secure an upside. Early assessment does, however, facilitate good decision-making. A degree of risk sharing is also built into the assessment.

If impacts are assessed retrospectively once costs are known, they are more likely to be awarded on the basis of cost and time rather than as a target.

Where the employer has a well-defined scheme that presents opportunities for cost saving via effective procurement and management, a co-operative approach based on risk sharing may be an incentive. The employer must appreciate, however, that the project has to be sufficiently well defined to enable a realistic target to be set and that the contractor and project manager must understand the relationship between target and actual costs.

06 Case Study

The case study is based on a commercial project using NEC2 with both the main contractor and some subcontractor packages being subject to target cost incentives. The employer adopted a target cost approach to achieve a balance between risk transfer and demand on in-house administration.

The agreed gain/pain share was based on a combination of fixed-sum preliminaries, overheads and profits. It rewarded early completion and provided some cushion for cost overruns. The gains would be divided 50:25:25, between the client, main contractor and subcontractors respectively.

The target cost was established using a well-developed design produced after a two-stage procurement process. In stage one, specialist contractors competed on overhead, profit, preliminaries and schedules of rates.

In stage two, the specialist either agreed a lump sum or, where there were genuine opportunities for performance improvement, a target cost approach was adopted.

The target cost was settled from quotations and guaranteed lump-sum payments for preliminaries, overheads and profits.

The actual cost was assessed through guaranteed payment and audited costs. There was no pain share mechanism, which meant the only allowable upward increase in costs came from the assessment of compensation events. These could trigger an increase in the value of the target costs related to the value of the work, together with an uplift for overhead, profit and preliminaries related to duration.

In practice, not all subcontractors were able to buy into the opportunities represented by the gain share. Reasons included:

Wondering why it was needed. Guaranteed preliminaries helped to gain their confidence

In the late stages of design, cost-saving opportunities related to buying power only

Contractors' control of their own costs. Some specialists were ineffective in controlling costs and accounting and could not track target and actual costs accurately.

The administration processes used on the contract took some time to settle down, emphasising the need for a familiarity with procedures. The compensation system also came under pressure owing to the volume of changes required. That said, specialists quickly understood the importance of the process, although it was difficult to agree "upfront" adjustments to the target costs.

In the final analysis, the project was a considerable success, delivered below budget and ahead of programme. Most specialists did well out of the project, although some lost control of their own administration and costs.

Some specialists introduced real innovation in their procurement and management to secure maximum savings and to maintain control over their own costs.

In general, cost control was heavily incentivised and the project was sufficiently well defined for the inducement to make an impact, even though there continued to be significant commercial issues affecting the project throughout. Whether in less positive circumstances the target cost mechanism could have provided the right balance of control and motivation is difficult to conclude, but on this project it played a part.

07 Advantages

Provides contractors and subcontractors with an incentive to improve performance and enables the client to secure a share of the benefits of a well-managed project

Encourages active and equitable risk sharing, based on a clearly defined allocation of risk agreed at the outset of the project.

Can incorporate lump-sum and prime-cost subcontracts under a single target price

Target costs provide incentive for the timely administration of change control mechanisms

Provides an accountable mechanism to enable public sector clients to use incentives.

Provides an incentive for the effective management of prime cost contracts.

08 Disadvantages

Requires contractor to share savings derived from improved performance with the client and other members of the supply chain

Client and contractor must share gain and pain if the full benefits are to be secured. The client may have greater exposure to cost risk

Potential for failure on insufficiently defined projects owing to misunderstandings of the operation of the incentive mechanism

Complex target price, gain/pain share and change controls may not be understood by all

Separation of target and actual costs before completion creates the potential for loss of control

Relies on administration best practice and a competent project manager.



Contracts in use

A Survey of Building Contracts in Use during 2007

Introduction

This RICS Contract in Use Survey – the 11th we have undertaken – is the single most authoritative survey of construction contracts used in the UK market. However, publishing the results of a survey taken during relative boom years of 2007 during a recession makes interesting reading: it tells us what was happening in a year in a boom period but it also fits in with the evidence of previous years' surveys and this helps point the way to a likely future.

While smaller projects continue to be dominated by 'plan and specification' procurement routes and lump sum contracts, larger projects show a preference for Construction Management or a version of Design and Build.

The key trends that emerge from this survey are as follows:

Lump Sum Design and Build v Bills of Quantities

In the 1985 survey, Bills of Quantities dominated the survey with minor use of the Design and Build forms. By the 1998 survey, Design and Build was ahead of Bills of Quantities. This was the time of major shifts in procurement strategies. Clients wanted certainty of risk transfer. This survey (2007) reinforces the dominance of Design and Build as a procurement strategy, with a continued decline in Bills of Quantities. However, Bills of Quantities refuse to die.

It should be noted that while the use of the 'with quantities forms' have declined there are still SMM7 Bills of Quantities being measured, often by Professional QS Practices, for Contractors in support of Design and Build tenders. It will be interesting in future years to see what is happening in the market when the RICS publishes NRM 2, the procurement section of the NRM suite of documents.

Negotiation and Two Stage tendering

Both saw a reported increase over other surveys and this reflects a market that was booming and probably under-reports what was actually happening. Two stage tendering often increases when contractors are reluctant to price single stage tenders. A survey undertaken in 2009 is likely to show very little use of two stage tendering as contractors are considerably more keen to price single stage tenders.

Plan and Specification

Procurement using specification and drawings or activity schedules is still the way the largest number of projects are procured. That it is the third most popular when looking at value indicates that it continues to dominate the smaller projects market.

Guaranteed Maximum Price

There is little reported use of procurement based upon a Guaranteed Maximum Price. This is often a Client driven contractual amendment to standard forms.

Use of Guaranteed Maximum Price is a fundamental part of the UK Health Service Procure 21 system; however, the survey picked up very few of these health projects and this area was considered to be under-reported.

Management Contracting/Construction Management

Management Contracting peaked in 1989 and has declined ever since and can be seen as a blip on the procurement market, although this survey shows some slight increase on the last survey. Construction Management is still being used, particularly on larger projects.

Electronic Tendering

It is worrying that there is still little evidence of the use of electronic tendering. It may well be that we are going through a period of paper based tendering with the documents being issued on CD as well, leading to under-reporting.

Extranet based tendering is the logical next step in the market, using such examples as the RCIS e-tendering service. Future surveys should pick up an increase in usage.

JCT v NEC

Once again the survey records the dominance of the JCT suite of contracts. However, this has dropped in relation to previous years as the NEC contracts are seeing an increase in usage.

Of the JCT suite of contracts the most popular is the Design and Build Form with the Standard Form with Quantities Form coming second. The Intermediate Form is solidly represented in lower value project bands as is the Minor Works Form. The survey is beginning to show an impact of the Major Project Contracts form.

The NEC was strongly supported in the Egan and Latham Reports but the forms have taken a long time to make any real showing, although they are now solidly established.

Partnering

Partnering Contracts were recorded for the first time in the 2001 survey and the 2004 survey recorded a substantial increase in the use of partnering agreements. However, the 2007 survey shows no increase in numbers but does show an increase by value. It is probably too early to tell what impact Partnering is having on the market.

PFI/PPP

The survey again asked about PFI/PPP but received no information. This probably means that the organisations returning forms were either not working in this field or, more likely, that the contractual relationships were managed by lawyers, who do not complete this survey.

Conclusions

In summary the survey reinforces many of the issues brought up in earlier surveys. It reinforces the dominance of Design and Build in the middle market, but Bills of Quantities are still out there being used on a regular basis. The JCT still dominates but the use of alternative standard forms is growing, particularly the NEC.

Michael Sullivan
Chairman Quantity Surveying and Construction Professional Group



Contracts in use

2007 survey

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Executive Summary

This survey captured a smaller number of projects than previous surveys but was able to reveal the following trends:

- The majority of building contracts in this country continue to use 'traditional' procurement
- The vast majority of building projects use a standard form of contract
- JCT contracts continue to be the preferred family of use
- There has been an increase in the use of negotiation
- There has been a reduction in the adoption of Guaranteed Maximum Price
- There has been a marked increase in the use of two stage procurement across all project values
- The survey suggests that electronic tendering has not proliferated
- There has been a measurable decline in the use of Bills of Materials
- Procurement using specifications and drawings or activity schedules has increased
- Over 50% of contracts in the £10k to £50m value bands were procured on a design and build basis
- There has been no apparent increase in partnering between the 2004 and 2007 surveys
- Little use of partnering arrangements in conjunction with standard forms of contract

Tables 1 and 2 show the trends identified in general procurement methods since 1985.

General procurement methods 2007

Chart 1:

Distribution of methods of procurement – by number of contracts

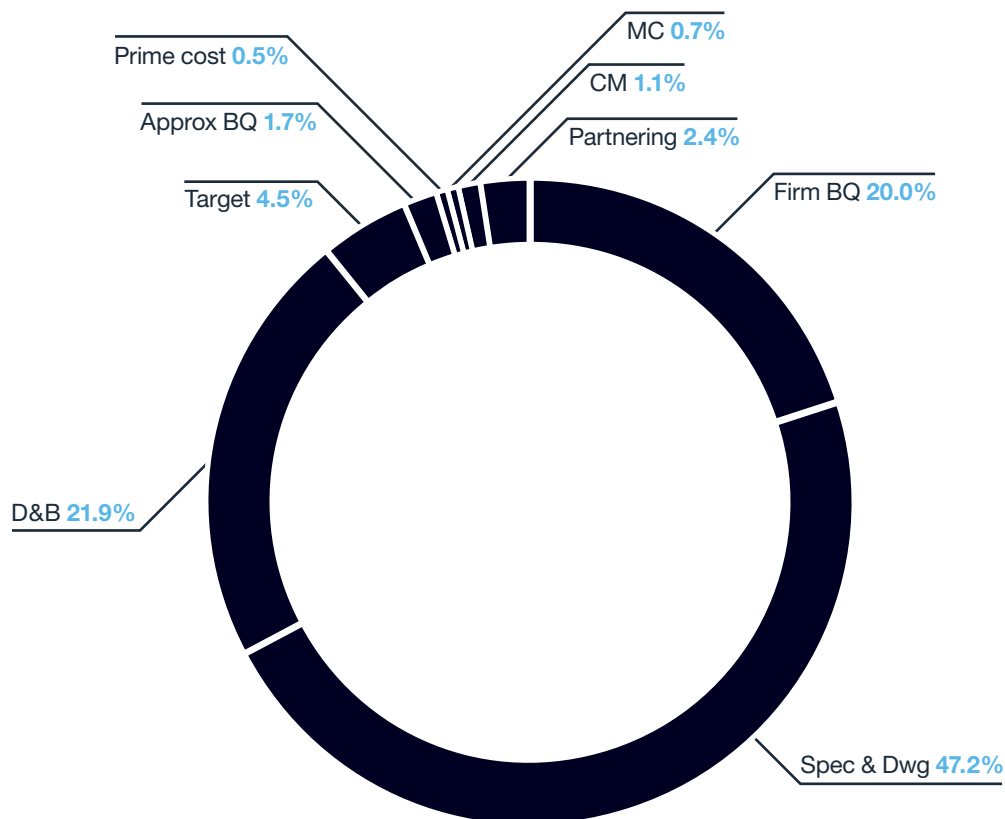
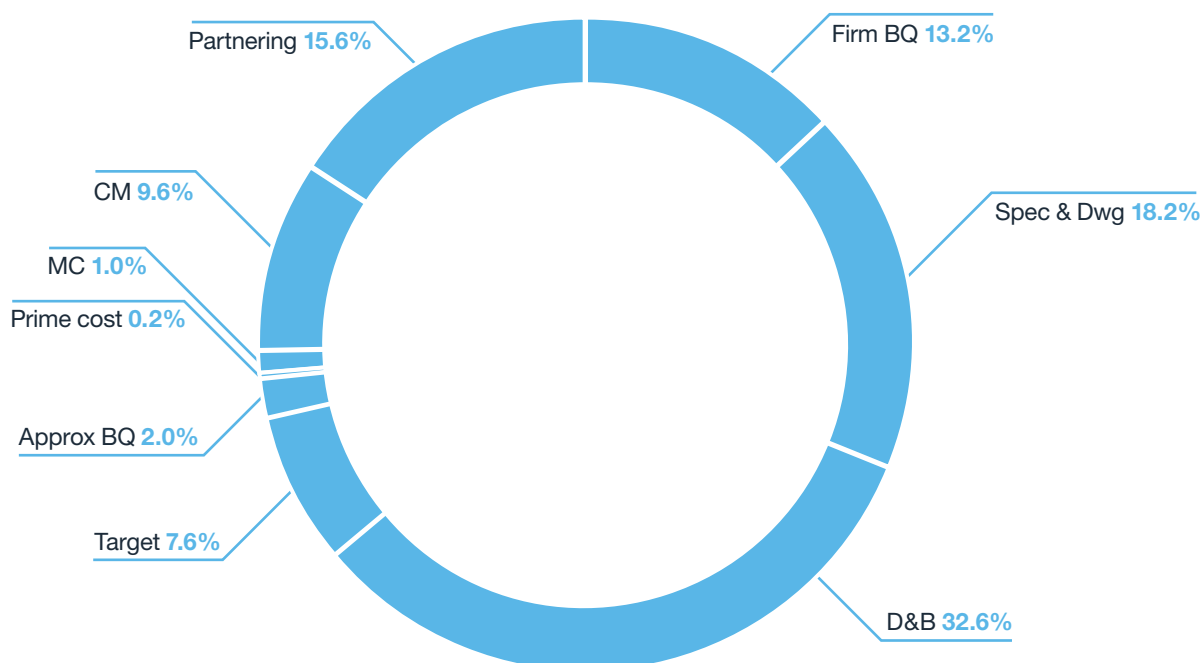


Chart 2:

Distribution of methods of procurement – by value of contracts



General procurement methods 2007

Table 1:

Trends in Methods of Procurement – by numbers of contracts

	1985 %	1987 %	1989 %	1991 %	1993 %	1995 %	1998 %	2001 %	2004 %	2007 %
Lump Sum – Firm BQ	42.8	35.6	39.7	29.0	34.5	39.2	30.8	19.6	31.1	20.0
Lump Sum – Spec & Drawings	47.1	55.4	49.7	59.2	45.6	43.7	43.9	62.9	42.7	47.2
Lump Sum – Design & Build	3.6	3.6	5.2	9.1	16.0	11.8	20.7	13.9	13.3	21.9
Target contracts	-	-	-	-	-	-	-	-	6.0	4.5
Remeasurement – Approx. BQ	2.7	1.9	2.9	1.5	2.3	2.1	1.9	1.7	2.9	1.7
Prime Cost Plus Fixed Fee	2.1	2.3	0.9	0.2	0.3	0.7	0.3	0.2	0.2	0.5
Management Contract	1.7	1.2	1.4	0.8	0.9	1.2	1.5	0.6	0.2	0.7
Construction Management	-	-	0.2	0.2	0.4	1.3	0.8	0.4	0.9	1.1
Partnering Agreements	-	-	-	-	-	-	-	0.6	2.7	2.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 2:

Trends in Methods of Procurement – by value of contracts

	1985 %	1987 %	1989 %	1991 %	1993 %	1995 %	1998 %	2001 %	2004 %	2007 %
Lump Sum – Firm BQ	59.3	52.1	52.3	48.3	41.6	43.7	28.4	20.3	23.6	13.2
Lump Sum – Spec & Drawings	10.2	17.7	10.2	7.0	8.3	12.2	10.0	20.2	10.7	18.2
Lump Sum – Design & Build	8.0	12.2	10.9	14.8	35.7	30.1	41.4	42.7	43.2	32.6
Target contracts	-	-	-	-	-	-	-	-	11.6	7.6
Remeasurement – Approx. BQ	5.4	3.4	3.6	2.5	4.1	2.4	1.7	2.8	2.5	2.0
Prime Cost Plus Fixed Fee	2.7	5.2	1.1	0.1	0.2	0.5	0.3	0.3	<0.1	0.2
Management Contract	14.4	9.4	15.0	7.9	6.2	6.9	10.4	2.3	0.8	1.0
Construction Management	-	-	6.9	19.4	3.9	4.2	7.7	9.6	0.9	9.6
Partnering Agreements	-	-	-	-	-	-	-	1.7	6.6	15.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Note: Percentages adjusted to exclude 'Other Contracts'.

The Survey

The survey encompasses projects for which work on site started during the calendar year, 1 January to 31 December 2007. The survey samples all building work carried out in the United Kingdom, both new build and refurbishment. Survey respondents were asked to exclude specifically all overseas work, civil engineering work and heavy engineering projects. Term contracts, routine maintenance and repair work and sub-contracts forming part of larger contracts were also asked to be excluded. The Survey Questionnaire can be seen at Appendix 1. The detailed results can be viewed at Appendix 2.

Response

The response to the survey is set out in Table 3 alongside the equivalent figures from the most recent surveys for comparison.

Table 3:

Response to the Survey

	1993	1995	1998	2001	2004	2007
Number of surveys returned	153	194	151	230	143	83
Number of projects captured	3786	4652	2457	2955	2330	1370
Value of projects captured (£m)	2819	3224	4767	3337	3035	7813
Average value of project (£m)	0.74	0.69	1.94	1.13	1.30	5.70
Average value (2007 prices) (£m)	1.65	1.30	3.26	1.59	1.49	5.70
Proportion of total value of new orders (%)	17.7	18.0	20.7	13.6	8.6	17.4

The number of returns and the number of projects captured in the current survey were well below the numbers received in earlier surveys but, conversely, the value of projects captured in the survey was considerably higher than in the previous surveys. As a result the average project value was much higher than in all the previous surveys. The higher value of projects captured means that the sample represents 17.4% of the total value of new orders received in Great Britain in 2007.

This means that the survey sample has different characteristics to the previous surveys and needs to be borne in mind when comparing results over time. The primary difference is that the current survey has captured many more large projects than the earlier surveys, e.g. in the 2004 survey only 4 projects over £50m value were included in the study; in the current survey 28 schemes over £50m value have been included. At the other end of the scale, 404 schemes (29%) below £250,000 value have been included in the current survey, compared to 1157 schemes (50%) in the 2004 survey.

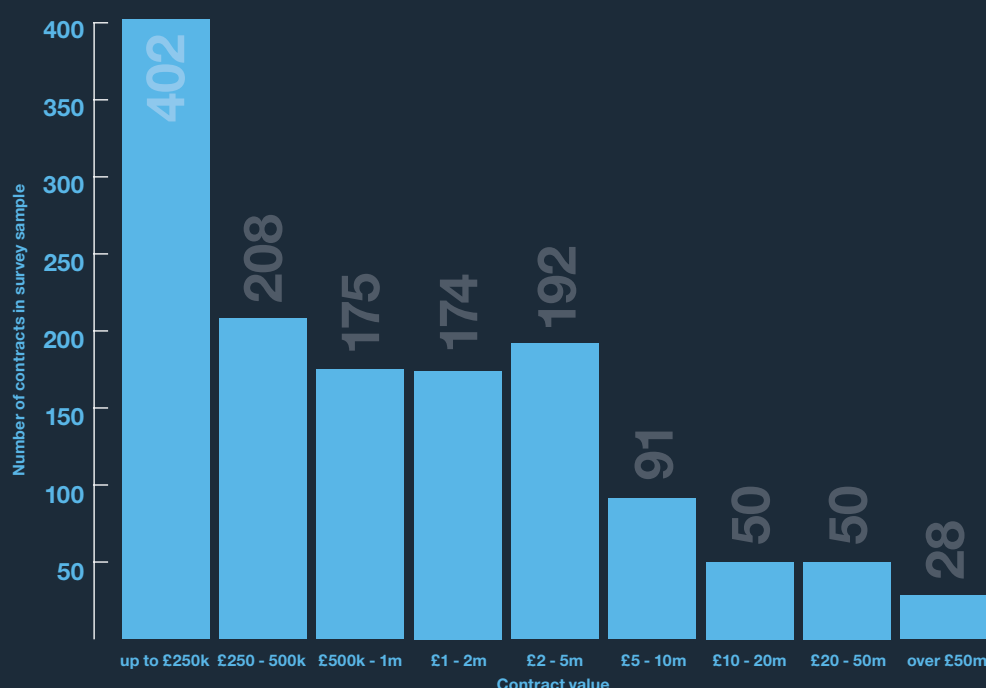
Analysis of returns

Distribution of Contracts

Appendix 2 shows the cumulative results of the survey and the distribution of contracts in use in 2007. As in previous surveys, contracts are arranged in value bands. The only change from the previous survey was to combine the two smallest value bands into a single 'up to £250,000' band, reducing the number of bands to 9. Chart 3 shows the distribution of contracts by value.

Chart 3:

Distribution of contracts by value bands (number of contracts)

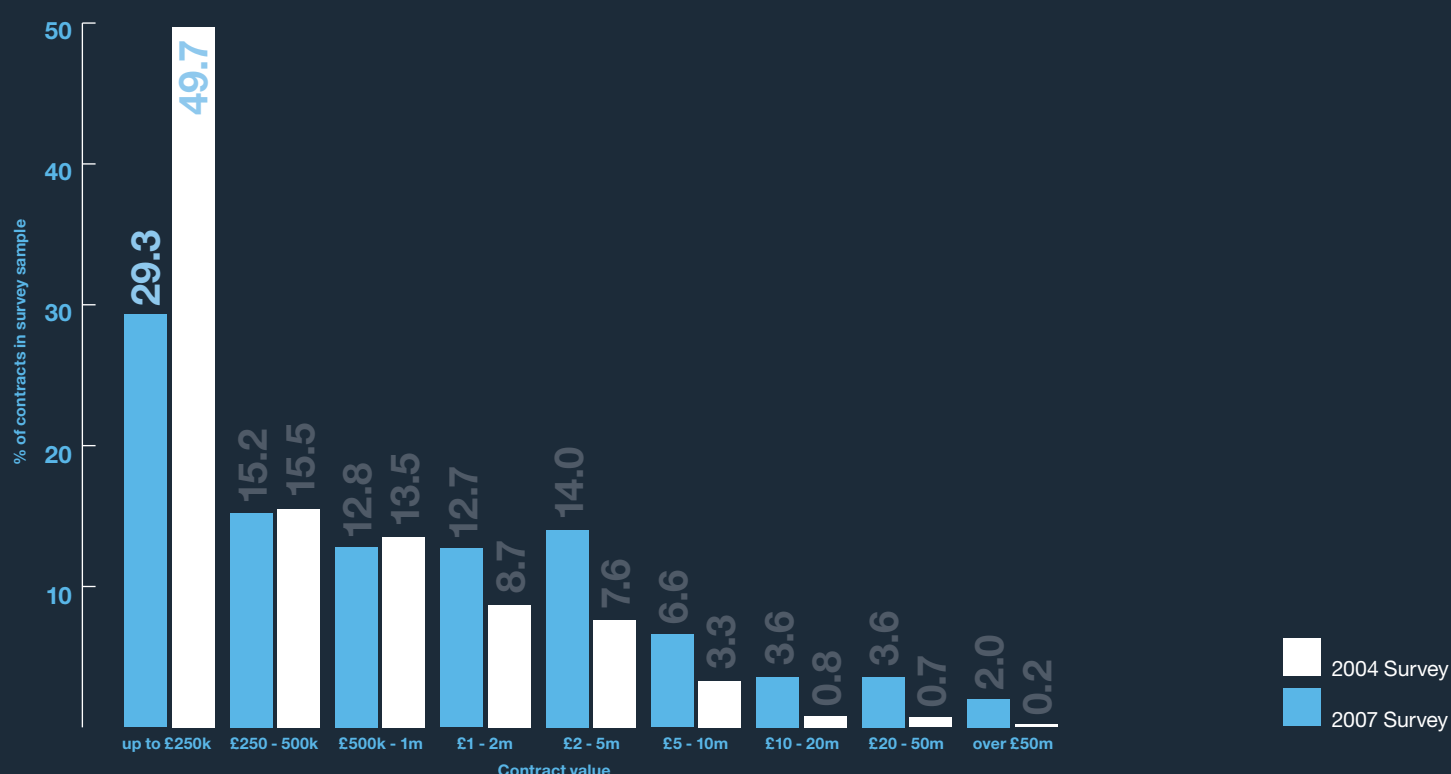


As in previous surveys, the smallest value contracts dominate the returns: in this case, contracts less than £250,000 in value accounted for 29% of the survey sample. However, this is a considerably lower percentage than in the previous two surveys, where contracts of under £250,000 accounted for 50% and 58% respectively of the samples (not allowing for inflation).

Chart 4 compares the distribution of projects by value in the 2004 and 2007 surveys by proportion of the total samples. The contract values have not been adjusted for inflation which increased prices by about 15% between 2004 and 2007, meaning that some 2004 contracts in each value band would shift into the next larger value category for a true comparison. However, the chart demonstrates that the 2007 survey has captured a greater proportion of larger value projects than the previous survey and this should be borne in mind when comparing the results.

Chart 4:

Distribution of contracts by value bands (percentage of contracts), 2007 and 2004 compared



Standard forms of contract

The vast majority of construction contracts still use one of the standard forms of contract, albeit sometimes with client or consultant amendments. Only 2.5% by number and 1.8% by value have used a non-standard form of contract, down from the figures recorded in the previous two surveys.

Table 4:

Use of Standard Forms of Contract

Contract family	% used by number	% used by value
JCT	79.3	61.5
ICE	1.2	2.1
NEC	7.7	14.0
GC/Works	6.1	2.9
ACA	2.2	5.5
Prime Contracting agreement	0.1	9.4
Other standard forms	0.9	2.8
Other contracts	2.5	1.8

Chart 5:

Use of Standard Forms of Contract (by number of contracts)

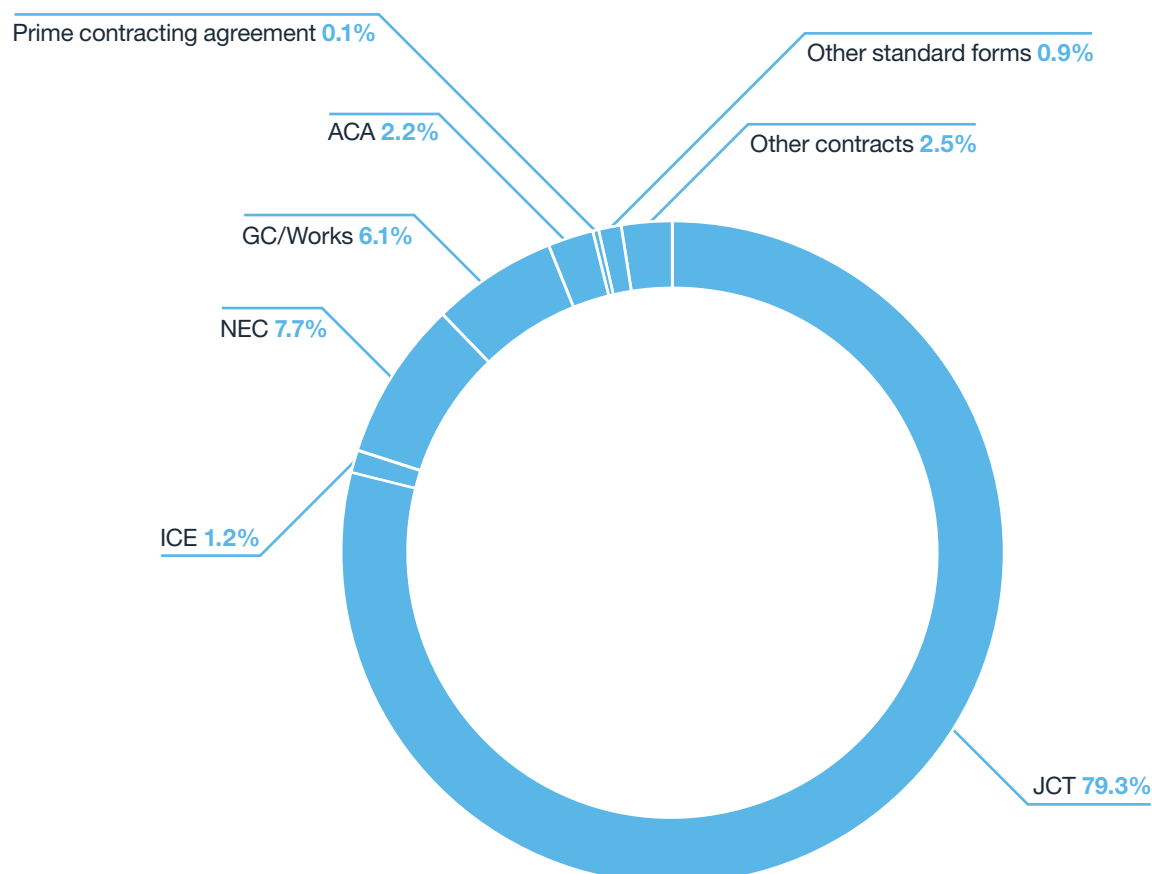
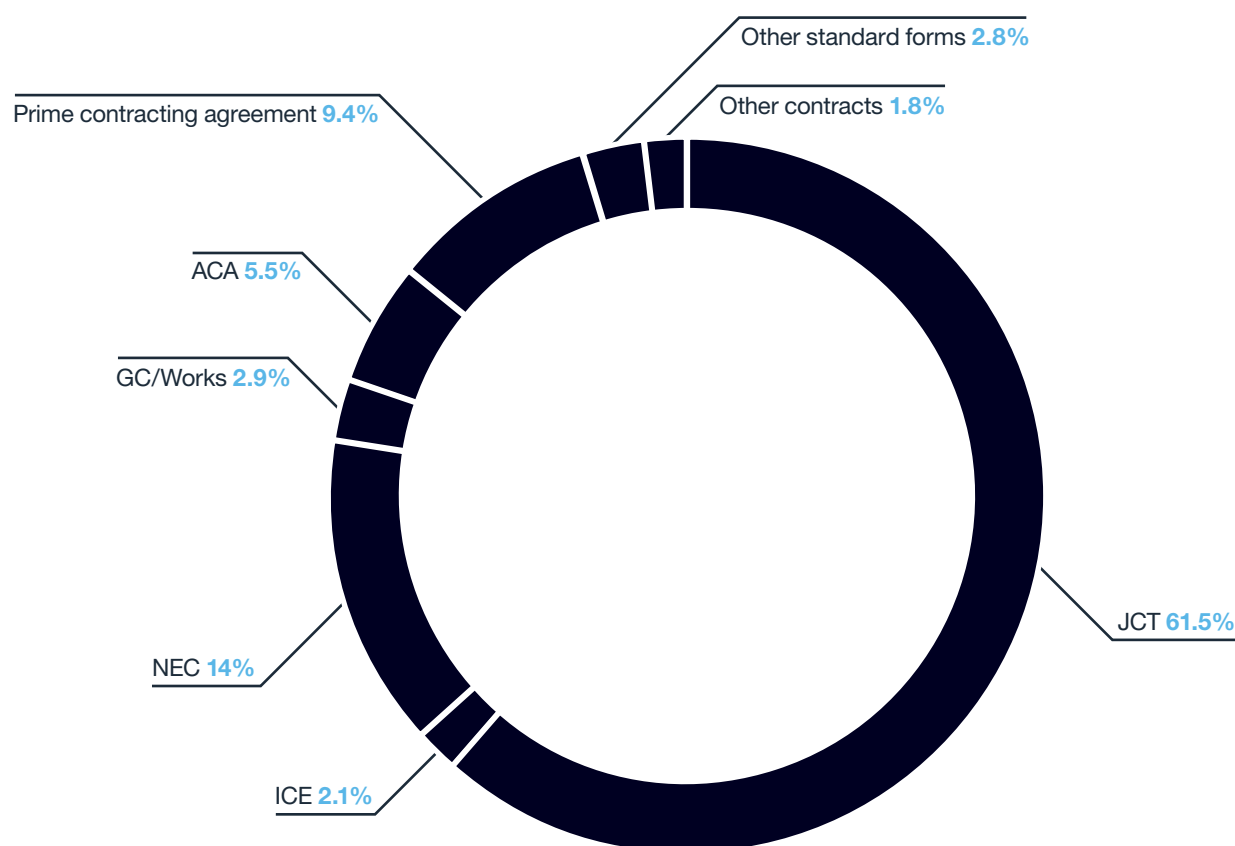


Chart 6:

Use of Standard Forms of Contract (by value of contracts)



JCT Forms

The JCT standard forms continue to dominate the construction contracts market: within the survey sample, 79% of all contracts by number employed a JCT standard form, almost identical to the last survey, though not quite as dominant as in 1998 or 2001. By value, the proportion of contracts employing one of the JCT family of contracts drops to 62% – its second lowest figure in the 22-year survey history.

Table 5:

Long Term Trends in the use of JCT Standard Forms

	1985 %	1987 %	1989 %	1991 %	1993 %	1995 %	1998 %	2001 %	2004 %	2007 %
Percentage of total number	81	86	81	78	82	85	91	91	78	79
Percentage of total value	70	74	81	61	80	76	68	79	70	62

By value the proportion has always recorded a slightly lower percentage than by number. This is because higher value schemes have had a greater tendency to employ some alternative form of contract such as construction management, NEC or PPC 2000. Nevertheless, in the current survey 61% of contracts over £50m in value have used one of the contracts in the JCT family.

Chart 7:

Use of JCT contracts by value bands

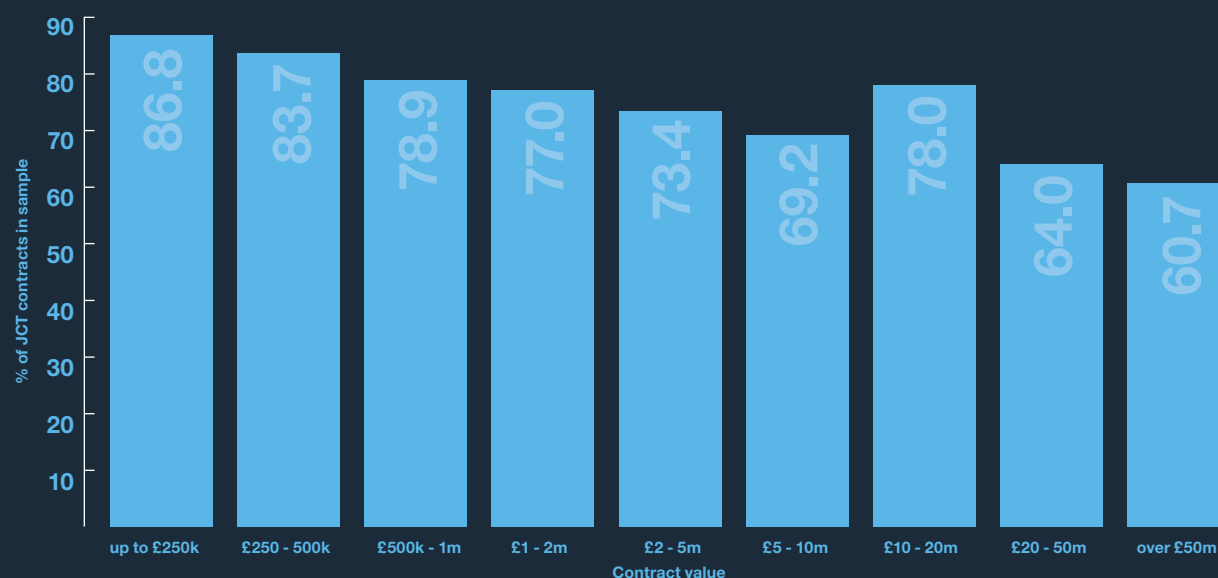


Chart 7 shows a general decline in the percentage of contracts employing a JCT form of contract as value increases.

The latest suite of JCT forms was introduced in 2005. However, a significant number of contracts employed on projects that started on site during 2007 still used the 1998 editions of the JCT forms. Of the 2005 suite of contracts for which a 1998 edition existed, 76% of contracts used the later 2005 version but 24% still used the 1998 edition. Similarly, 3 out of 15 examples of use of construction management used the 2002 documentation rather than the 2005 Construction Management Agreement while 2 out of 5 projects used the 2003 Major Project Form rather than the 2005 Major Project Construction Contract.

Table 6 plots the breakdown by type of JCT form, showing a comparison with the 2001 and 2004 survey results.

Table 6:

Use of JCT Standard Forms (irrespective of edition)

Form	Percentage in Numbers			Percentage by Value		
	2001	2004	2007	2001	2004	2007
JCT Standard Contract						
with quantities	8.5	14.9	11.7	12.7	18.4	10.2
without quantities	4.6	5.3	6.2	10.4	3.6	7.8
with approximate quantities	0.4	2.6	0.9	0.9	2.5	1.5
Design and Build	13.3	11.2	19.4	39.7	35.6	25.3
Intermediate Form with quantities	9.4	11.8	6.7	5.2	3.5	1.1
Intermediate Form without quantities	14.0	8.1	8.5	4.8	2.4	1.4
Minor Works	40.0	23.5	23.5	2.9	2.4	0.9
Prime Cost Contract	0.2	0.1	0.4	0.3	<0.1	<0.1
Management Contract	0.4	0.2	0.6	2.0	0.7	0.6
Construction Management	-	0.1	1.1	-	0.5	9.1
Major Project Contract	-	0.1	0.4	-	0.4	3.5
Total JCT Forms	90.8	77.9	79.3	78.9	70.0	61.5

By number, the proportion of contracts employing a JCT contract remains very similar to that seen in the previous survey though lower than either of the two previous surveys. By value, the proportion of contracts using a JCT form has fallen, in part, at least, due to the larger proportion of higher value projects in the current sample ([see Chart 4](#)).

Standard Building Contract

with quantities

The proportion of contracts using the JCT Standard Building Contract with quantities (or its 1998 version) declined slightly by number from the 2004 survey but was higher than that recorded in 2001. By value the proportion in 2007 declined to 10%, the lowest figure recorded in the history of the survey. 27% of the sample still used the 1998 edition.

Only 7 of the 117 instances of use of the 2005 Standard Building Contract with quantities used the 'without contractor's design' variant (SBC/Q/XD). Similarly the majority of those contracts using the 1998 edition of the form also employed the Contractor's Designed Portion Supplement. This was in contrast to the 2004 and 2001 surveys, in which only 28% and 25% respectively of the contracts used the CDPS.

with approximate quantities

The With Approximate Quantities form was used only in 0.9% of occasions by number and 1.5% by value, a similarly low proportion of use to earlier surveys. When this form was used, the 'without contractor's design' variant was used in 75% of cases.

without quantities

Compared to the 2004 survey, there was a slight increase in the use of the Without Quantities forms. This form was used mostly on contracts below £10m in value but the percentage use by value was boosted by four instances of its use on contracts over £50m in value. The use of the 'without contractor's design' variant was again used on only a very small percentage of contracts (13% of the 2005 edition forms).

Intermediate Building Contract

The use of the Intermediate Building Contract (or the 1998 Intermediate Form of Contract) has declined to its lowest ever level, particularly that with quantities.

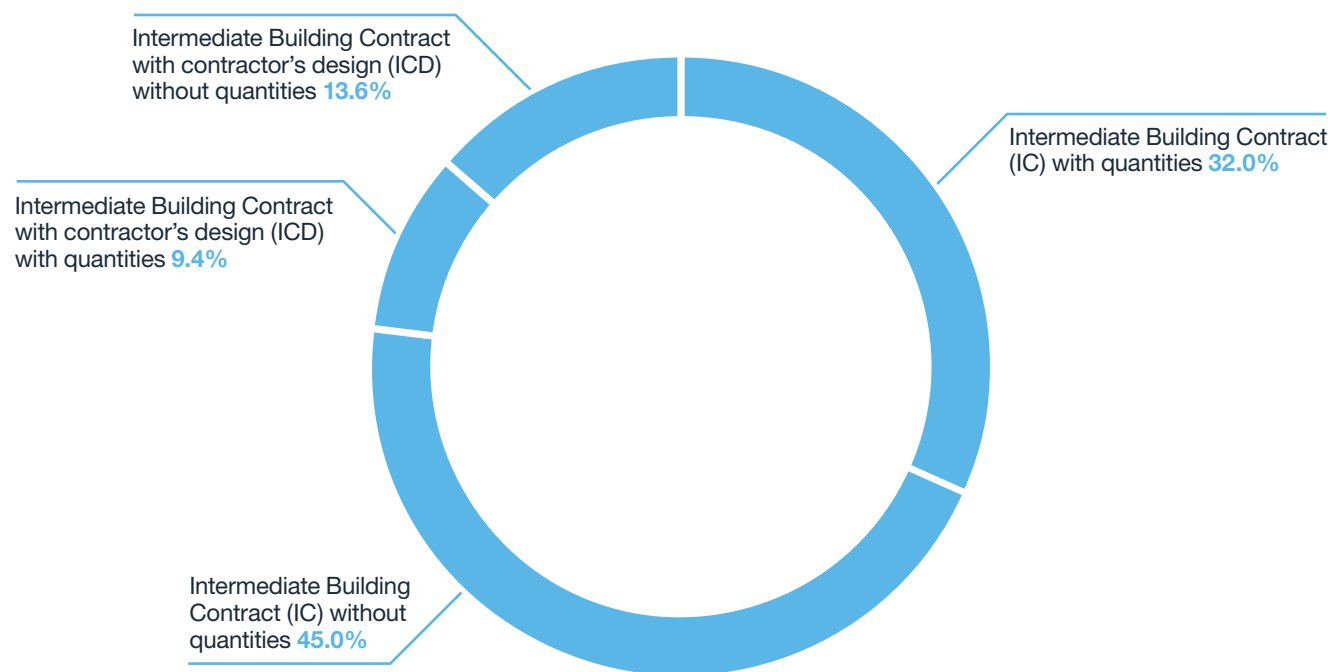
The JCT Practice Note 'Deciding on the appropriate JCT contract' no longer suggests maximum values of projects to which the different contracts are suited but based on the 2001 Practice Note relative to the 1998 contract editions, the normal maximum would be a little over £500,000 at 2007 prices. Only 50% of the instances of the use of the Intermediate Building Contract were on projects below £500,000 value, though this percentage increased to 80% for projects below £1m.

Only 18% of Intermediate contracts used the old 1998 version of the form.

The following chart shows the proportion of projects using the various alternative options, with and without quantities, with and without contractor's design, of the 2005 Intermediate Building Contract.

Chart 8:

The 2005 Intermediate Building Contract



45% of contracts were without quantities and without contractor design while 32% were with quantities but without contractor design. Only 23% of the projects used the 'with contractor's design' variants.

Minor Works Building Contract

The use of the Minor Works Building Contract or the 1998 Agreement for Minor Building Works exactly matched the 2004 Survey in proportion by number but was lower by value. Considering the different sample characteristics, it may have been expected that the proportion by number may have fallen as well as that by value.

The 2001 Practice Note suggested that the Agreement for Minor Building Works was suitable for contracts up to a value of approximately £150,000 (2007 prices) though the current Practice Note makes no recommendation regarding project size. 24% of projects using the Minor Works Building Contract or the 1998 Agreement for Minor Building Works were over £250,000 in value with instances up to £2m in value.

Only 11% of the sample used the old 1998 version of the form.

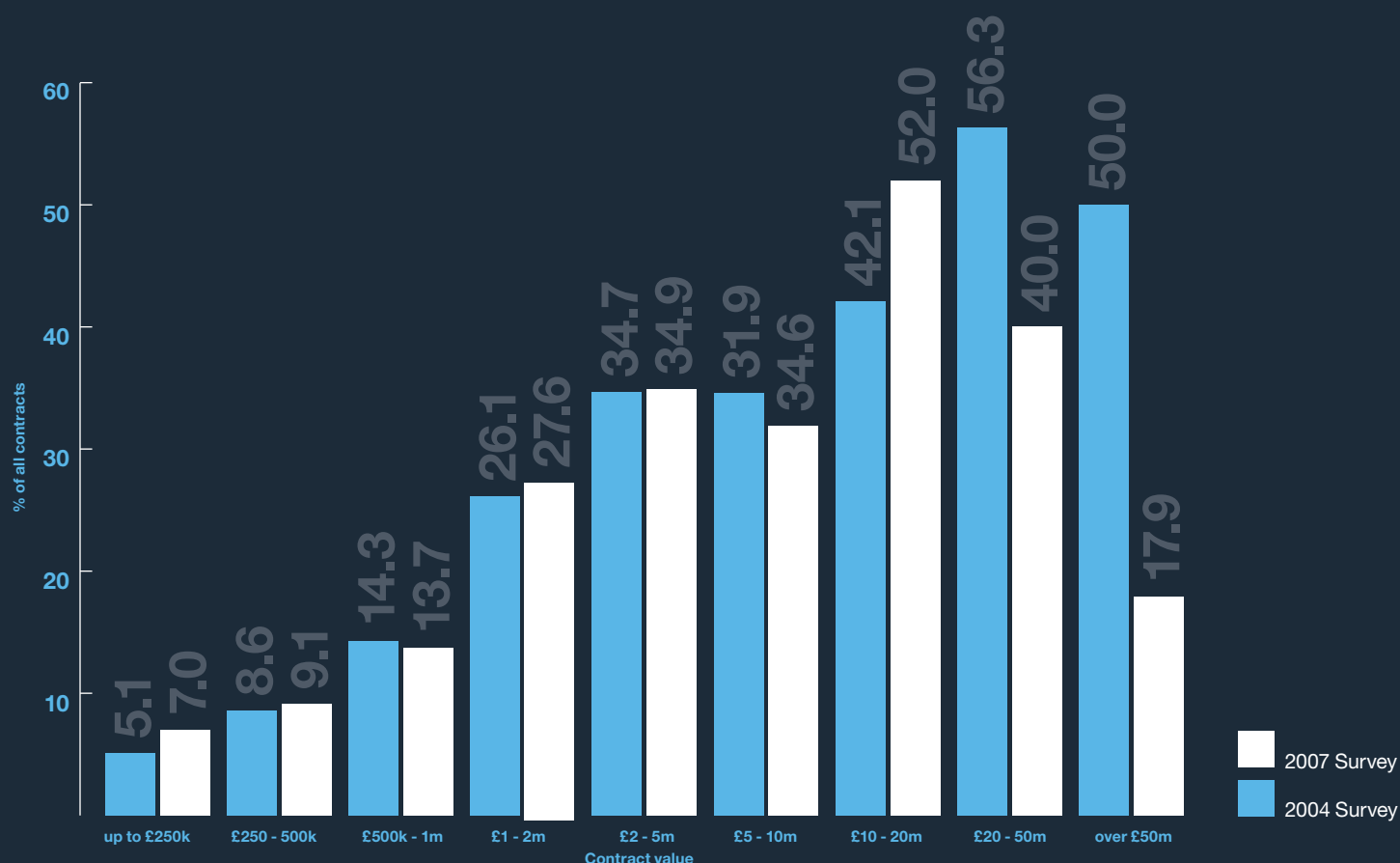
The 2005 Contract introduced a Minor Works Building Contract with contractor's design option (MWD) when there was no design supplement available for the 1998 edition. The MWD contract was used on 14% of projects using the 2005 Minor Works Building Contract.

Design and Build Contract

The use of the JCT Design and Build Contract (or the 1998 Standard Form with Contractor's Design) declined as a proportion of all contracts by value but rose sharply as a proportion by number. At 19% of all contracts used, the proportion by number is the highest figure ever recorded. To a large extent, these variations are a function of the different characteristics of the two samples. The following chart shows how, to a large extent, the use of JCT design and build contracts has remained constant between the 2004 and 2007 surveys. Within each value band the proportional use of the D&B form has remained remarkably consistent except at the highest value band: the latter is the result of the very small number of contracts in the 2004 survey over £50m value.

Chart 9:

The use of JCT Design and Build by value (2007 and 2004 compared)



32% of instances recorded used the old 1998 Form rather than the 2005 version.

Major Project Construction Contract

The original Major Project Form was introduced in 2003 and found only two instances of its use in the 2004 survey.

The 2007 survey has found two instances of the use of the 2003 Form and three instances of the 2006 Major Project Construction Contract. Two of the five examples were used on projects over £20m value but the others were for schemes in the £2–5m, £1–2m and £250–500,000 range.

For schemes over £20m, the Major Project Construction Contract (or its 2003 equivalent) was used on less than 3% of occasions.

Construction Management

The 2007 survey has identified a much greater use of the JCT Construction Management documentation than the 2004 survey. This time 15 instances of its use were captured (12 using the 2005 version and 3 the 2002 edition) compared to just 3 instances in the 2004 survey. This still accounts for only a tiny proportion of contracts used but represents 9% of the value of projects in the sample, largely accounted for by 3 very large schemes averaging £216m each.

In addition to these, the CM documentation has been used for projects in every value band.

Management Building Contract

Management contracts continue to be used sparingly. Only 8 instances of the use of the JCT forms (6 using the 2005 Management Building Contract and 2 the 1998 edition) were identified in the current survey, though this was more than in 2004.

7 of the 8 projects were in conjunction with projects in the £500,000 to £5m value bands.

Prime Cost Building Contract

Just 5 instances of use of the Prime Cost Building Contract were identified in the current survey, similar to the single figures identified in each of the previous three surveys. The contract was used on projects up to £2m in value.

Each instance employed the 2005 Contract; no examples were recorded of use of the earlier 1998 contract.

Constructing Excellence Contract

The Constructing Excellence Contract was introduced only in 2006 but not a single use of the form was identified in the survey.

Partnering Charter (Non-binding)

The JCT Partnering Charter (Non-binding) 2005 superseded the 2001 JCT Non-Binding Partnering Charter for Single Project and is intended for use with any contract where the parties wish to inculcate a partnering philosophy into the contractual arrangement. In the 2004 survey, the Charter was recorded as being used on 11 occasions. In the 2007 survey, this has slumped to just 2 instances, both on contracts of £500,000 to £1m value.

ICE Forms of Contract

Although the ICE family of forms were designed largely for use in connection with works of civil engineering construction, they are sometimes used for building works, particularly where large amounts of earthworks are involved, and for this reason the forms continue to be included in this survey.

16 instances have been identified in this survey of the use of one of the ICE family, accounting for 1% of all the contracts recorded, a similar level to that recorded in the previous two surveys. The ICE forms accounted for 2% by value of all the contracts, higher than the previous two surveys. This was because of 2 instances of use of the ICE Target Cost Version introduced in 2006, both used on contracts over £50m value.

The ICE 6th Edition (1991) contract accounted for 50% of the ICE contracts recorded, covering contracts in each value band between £250,000 and £20m.

Only 2 instances of the ICE Measurement Version 7th Edition (1999) were recorded.

The ICE Design & Construct 2nd edition (2001) was used on 3 occasions, each on contracts in the £2–5m range.

A single example of the use of the ICE Minor Works 3rd edition (2001) was recorded.

Just as in the 2004 survey, not one example of the use of the ICE Partnering Addendum was found in this survey.

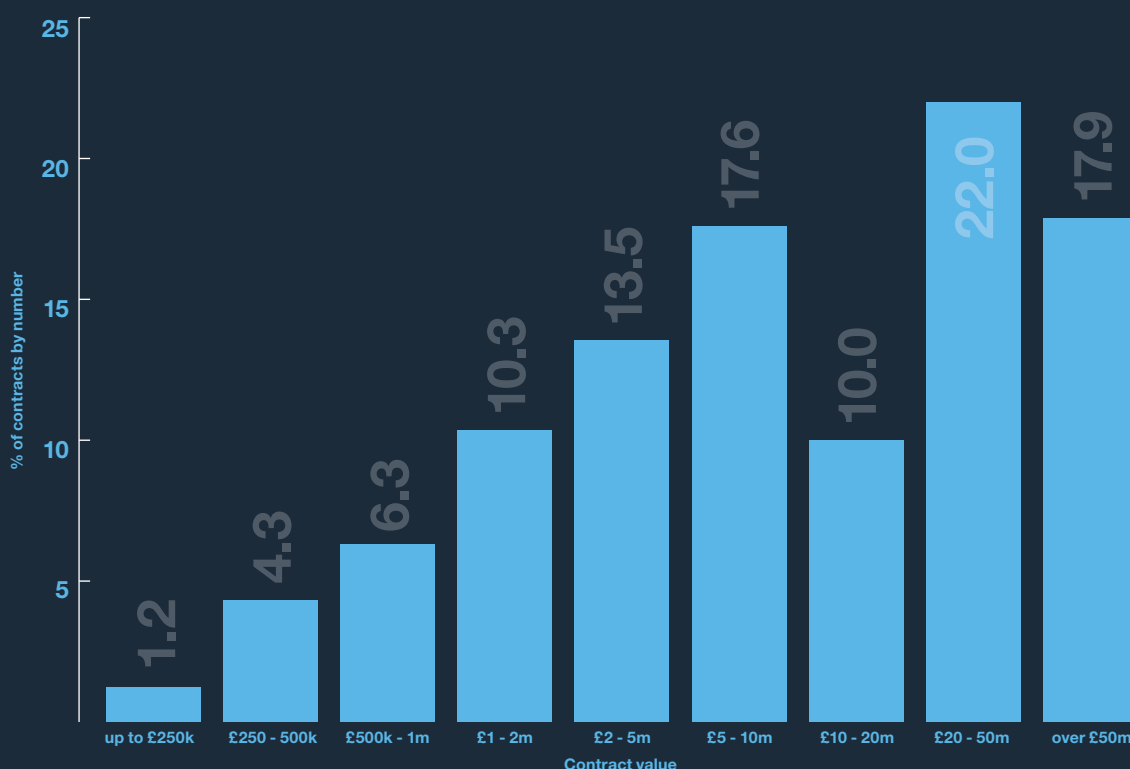
NEC Family of Contracts

The survey sought to separately record the use of the NEC2 1995 and NEC3 2005 Engineering and Construction Contracts. 37% of the contracts recorded used the 1995 versions. In total, NEC contracts accounted for 7.7% of the total number of contracts surveyed and 14% of the value of contracts surveyed. This is just slightly higher than the figures recorded in the 2004 survey – 6.7% and 12.8% respectively.

The following chart shows the proportion of each value band in which an NEC contract was used.

Chart 10:

The proportion of contracts employing an NEC Contract



There is a clear upward trend towards greater use as contract value increases.

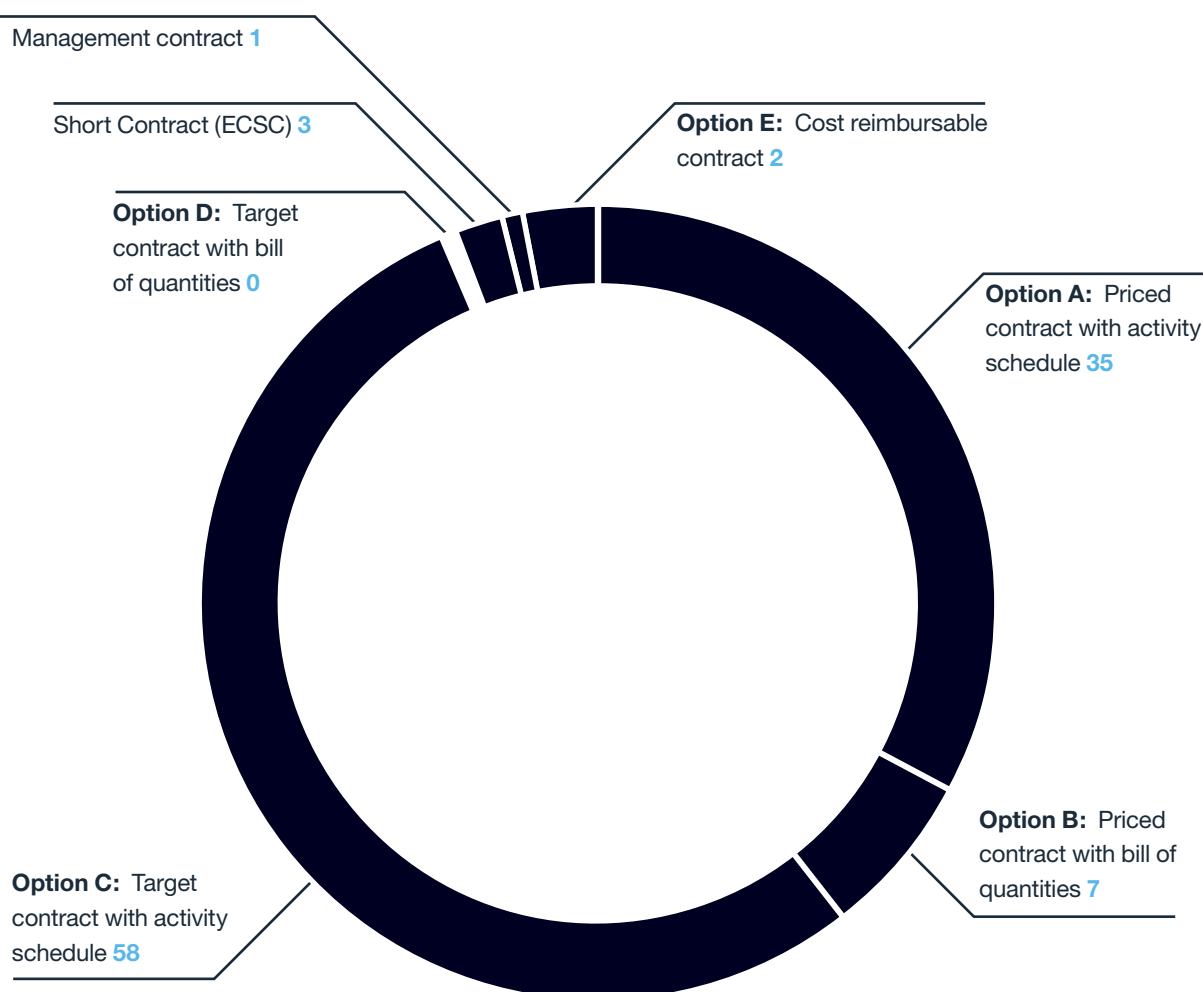
As in the 2004 survey, Option C Target contract with activity schedule continues to dominate the option choice, being used in 55% of NEC contracts (though down from 77% in 2004).

This time Option A Priced contract with activity schedule has found greater use, being used in 33% of NEC contracts.

The following chart shows the comparative use of the various NEC options, whether NEC2 or NEC3.

Chart 11:

Use of NEC Options (by number)



Option A was largely used on contracts below £10m value.

Option B Priced contract with bill of quantities was used on 7 occasions, largely in the mid value range bands.

Option D Target contract with bill of quantities was not used at all.

Option E Cost reimbursable contract was used on 2 occasions in the £2–10m value ranges.

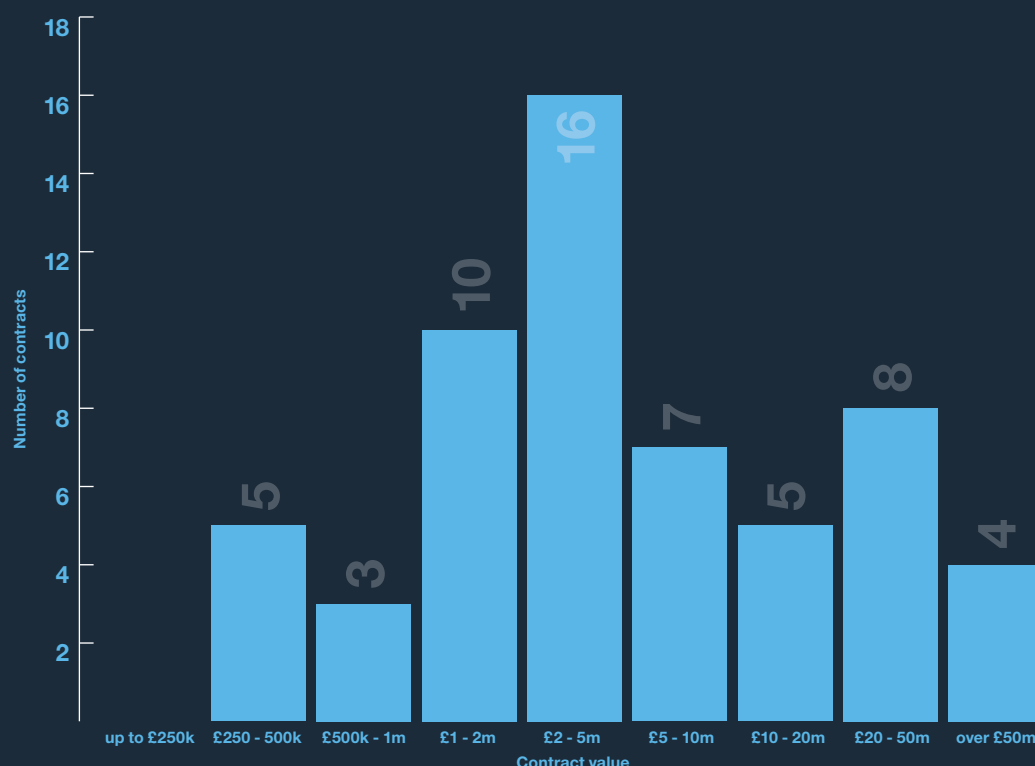
Option F Management Contract found a single use on a £20–50m contract.

The Short Contract (ECSC) was used on 3 occasions on contracts below £500,000 in value.

Option C Target contract with activity schedule was used throughout the value bands though predominantly on mid-range contracts as illustrated in Chart 12.

Chart 12:

Contracts using Option C Target contract with activity schedule



Option X12 is the NEC's Partnering Option, intended for use as a secondary option as part of the NEC family of contracts. In the 2004 survey, 17 cases were identified of its use with one or other of the NEC contracts, representing 11% of all the NEC contracts identified in the survey. In the current survey, 10 examples of use of the Partnering Option were identified, representing 9% of the NEC sample, a similar proportion but not suggestive of any increase in partnering arrangements.

No examples were reported of NEC forms used in conjunction with ProCure21, at the time the NHS Estates' preferred means of procuring construction. As in the previous survey, it would appear that this has simply been under-reported.

GC/Works Contracts

The 2007 survey has recorded a much higher incidence in the use of GC/Works Contracts than previous surveys. 83 instances were recorded of the use of one of the family of GC/Works contracts, representing 6% of the total number of contracts recorded and nearly 3% of the value of contracts. The preceding three surveys recorded just 1 to 1.6% of GC/Works contracts in their samples, though percentages by value were more variable.

The main difference between the 2007 survey and the 2004 survey has been the number of instances recorded of use of the Minor Works and Small Works contracts. The current survey found 29 instances of GC/Works/2 Minor Works and 20 instances of GC/Works/4 Small Works compared to 2 and 0 in 2004.

The GC/Works/1 Construction Management form was not used at all in 2007 or 2004.

GC/Works/1 Amendment 1 (Achieving Excellence) was introduced in 2000 to provide new conditions for the Design and Build variants of GC/Works/1 in support of 'Achieving Excellence' – the construction procurement initiative championed by the Government Construction Clients Panel. Although there were comparatively few D&B GC/Works contracts in the samples, not a single instance was recorded of the use of this Amendment in either 2004 or 2007.

PC/Works Forms

The PC/Works (1998) suite of contracts was introduced as an adapted form of GC/Works for use by private sector, local authority, NHS trust and all non-Central Government employers.

It has never achieved much use since its introduction and not a single occurrence was recorded in the current survey.

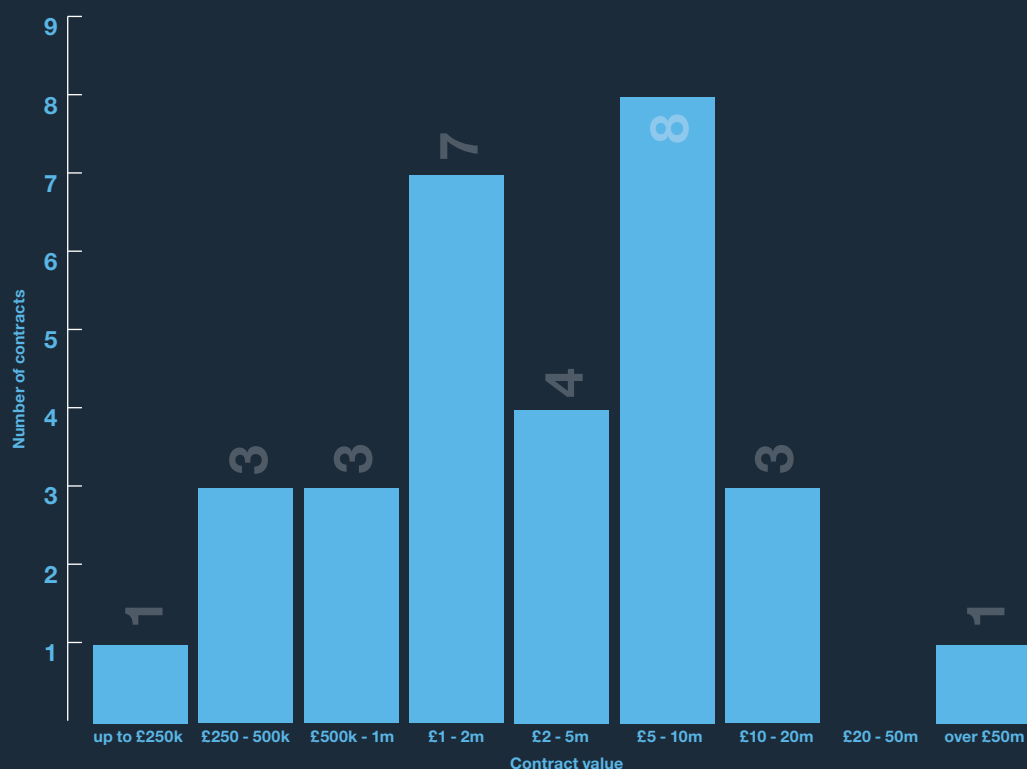
Association of Consultant Architects

The ACA Standard Form of Project Partnering (PPC2000) was promoted as the first Standard Form Project Partnering Contract and was published in September 2000. The current survey has recorded 30 instances of its use, representing 2.2% of the survey sample by number and 5.5% by value. These figures are very similar to those recorded in the 2004 survey.

The form is used on a wide variety of contract values as illustrated below.

Chart 13:

Use of ACA Standard Form of Project Partnering (PPC2000)



Other Standard Forms of Contract

No examples were reported of the use of Defcon 2000, the forms of contract introduced by Defence Estates in 2000, in the current survey.

Under the heading of 'Other Standard Forms', two examples were recorded of the use of FIDIC, the contract of the International Federation of Consulting Engineers, including for a project over £50m in value.

Also included under this heading were 3 examples of the I-ChemE Reimbursable Contract, used on projects between £500,000 and £5m.

Non-Standard Forms

Non-standard forms accounted for 2.5% of all the contracts identified by number and 1.8% by value, much smaller percentages than in any of the previous surveys. The majority of the forms of contract under this heading were private clients' own forms.

Additional Contract Provisions

The questionnaire requested survey respondents to provide additional data relative to procurement trends. It seems likely from the survey forms that some respondents failed to complete this section of the forms and for this reason the data results may under-record the true level of usage in this section of the report.

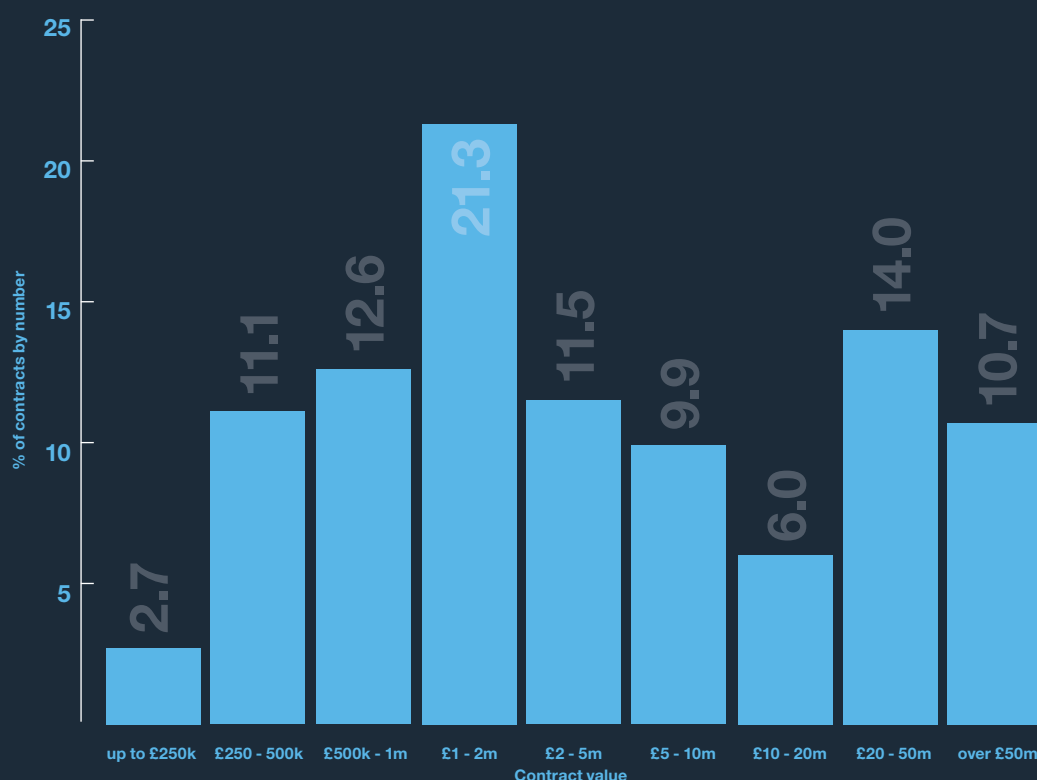
Negotiated contracts

137 of the total of 1370 contracts were listed as negotiated, i.e. exactly 10% of the sample. Despite possible under-recording, this still represents a rise in the use of negotiated contracts compared to the most recent previous surveys. The previous two surveys (2004 and 2001) identified 8.7% and 5.9% of the samples respectively though the 1998 survey found a higher incidence of the use of negotiation – just under 13%.

Negotiation varied from just 2.7% of the smallest value contracts (under £250,000) to 21.3% of contracts in the £1–2m range. (See Chart 14).

Chart 14:

The use of negotiation



Fluctuating Price Contracts

In the whole sample, only 2 contracts were identified as having variation of price provision, both in connection with contracts of just £5–10m in value. The dearth of fluctuating price contracts was the same in earlier surveys.

Guaranteed Maximum Price

The numbers indicate that the use of Guaranteed Maximum Price provisions has fallen away. Just 16 instances were recorded in the current survey, representing just over 1% of the sample by number and just under 1% by value. In the 2001 survey, GMP was noted in 3.9% of the sample by number and 2.8% by value.

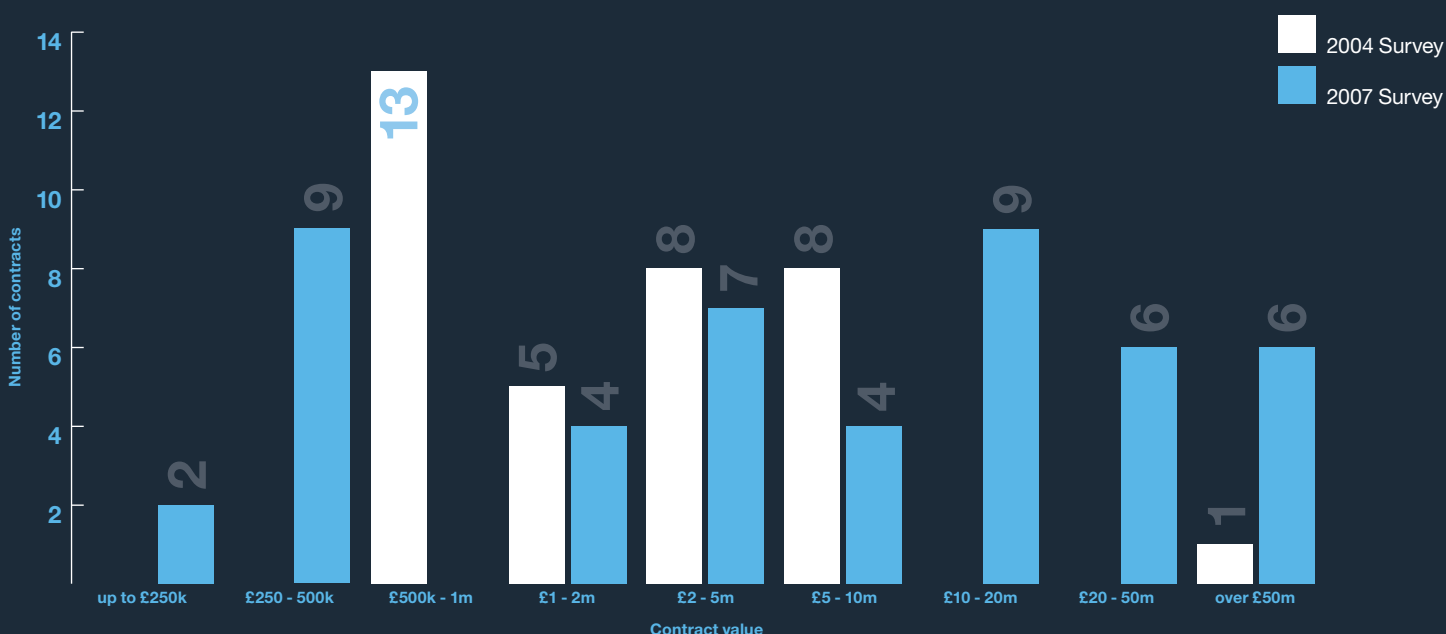
All the reported instances were in mid value contracts, between £500,000 and £20m value, whereas, in the previous survey, 27% of occurrences were with contracts below £500,000 value.

Two stage procurement

Unsurprisingly, this survey has identified a marked increase in the use of two stage tendering across all project values. 3.4% of contracts used a two stage procurement strategy compared to 1.5% in the 2004 survey. However, by value, the increase was less marked, up from 5.1% to 6.1% of the respective samples. In 2001, the use of two stage procurement was largely restricted to projects in the £500,000 to £10m value ranges. The current survey saw its use more widely spread:

Chart 15:

Two stage procurement strategies



The survey did not identify which types of contracts were most likely to be used with a two stage procurement strategy.

Incentivisation

For the second survey running, this survey enquired about the use of additional incentivisation provisions in building contracts. Only 8 instances were noted of the use of such provisions (just 0.6% of the sample) compared with 77 occurrences in the last survey (representing 3.3% of contracts). In 2004 the majority of uses were in connection with small contracts up to £250,000 but, in this survey, the instances were on larger projects in the value range of £1m to £50m. Details of the type of incentivisation or the methodology employed were not requested.

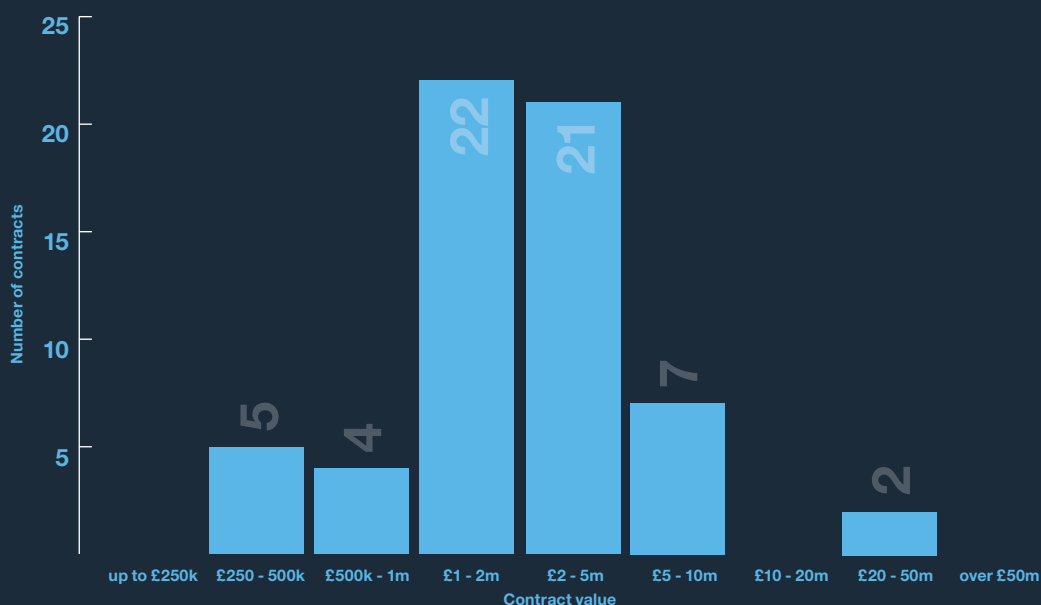
Electronic tendering

An additional question on the use of electronic tendering was also asked for the second time. Perhaps surprisingly, the number of instances recorded fell markedly. Only 6 occurrences were recorded (on projects up to £10m), representing just 0.4% of the total sample, compared to 54 projects (or 2.3% of the sample) in 2004. Under-recording may partly explain the apparent lack of use, though the 2004 sample suffered from a similar deficiency.

Framework agreements

This survey, for the first time, enquired about projects procured under framework agreements. 61 contracts, representing 4.5% of the sample, were noted as being procured under a framework agreement. These projects represented 2.9% of the sample by value. Chart 16 shows the project sizes that were procured under a framework agreement.

Chart 16: Framework agreements



Private Finance Initiative/Public Private Partnership

Although the survey questionnaire enabled respondents to identify where schemes had been procured under PFI/PPP arrangements, no such schemes were picked up in the survey or identified as such.

Procurement Methods

Bills of Quantities

The use of Bills of Quantities dropped to its lowest level in the survey's history. Firm B.Q.'s were used on 20% of contracts in the sample, similar to the results in the 2001 survey (which was characterized by a high proportion of very small value contracts) but considerably less than all previous surveys.

By value, the proportion of contracts using firm BQs dropped to just 13.2% – the first time this measure has dropped below 20%.

The use of Approximate Bills of Quantities, which has never featured heavily in the survey, also declined compared to the previous survey, in both number and value terms (1.7% and 2.0% respectively), though, numerically, the figure is only slightly below the long term average.

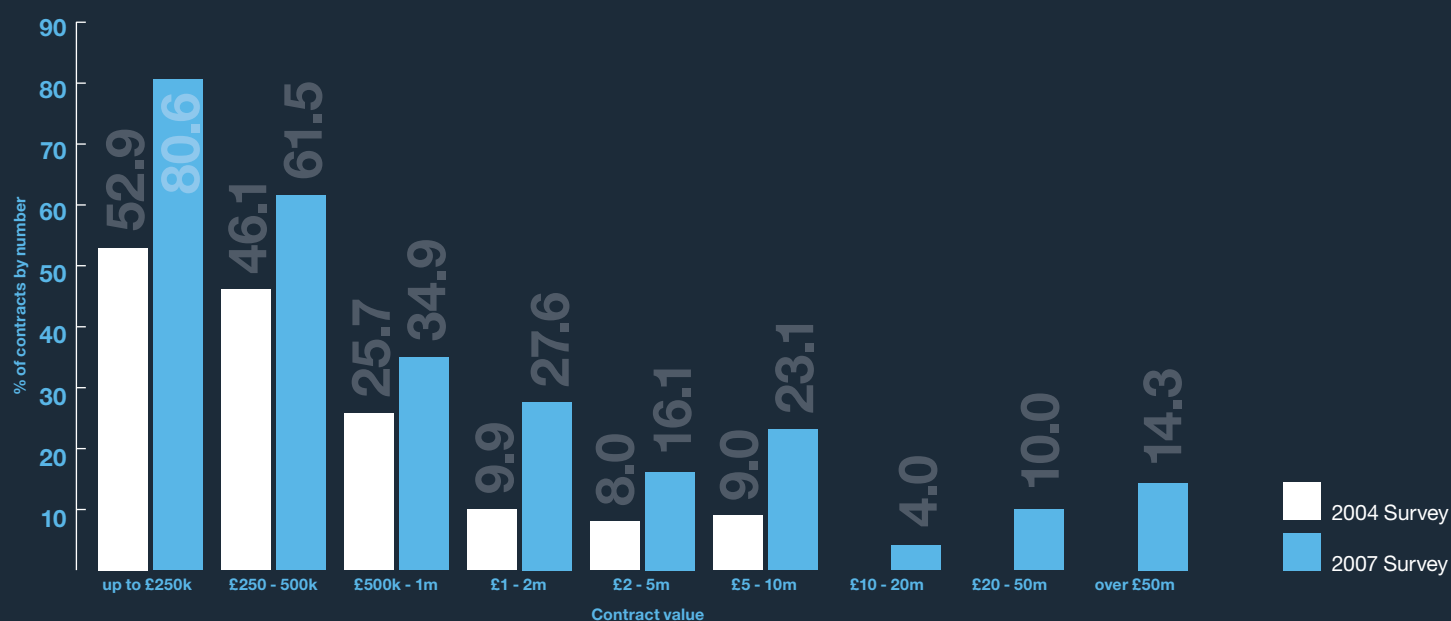
Specification and Drawings/ Activity Schedules

Unsurprisingly, given the results above, contracts employing specification and drawings or activity schedules (rather than Bills of Quantities) increased compared to the last survey. 47.2% of contracts by number used this method compared to 42.7% last time, though this is below the long term average of 50%. By value, 18.2% of contracts used specification and drawings or activity schedules compared to 10.7% last time and this is well above the long term average of 12%.

The chart below shows the percentages within each contract value band using specification and drawings or activity schedules compared to the previous survey.

Chart 17:

Specification and Drawings / Activity Schedules by project value



The chart shows that the percentage use of specification and drawings or activity schedules increased in every contract value range. They were also used on contracts above £10m value, for which no examples were recorded in the 2001 survey.

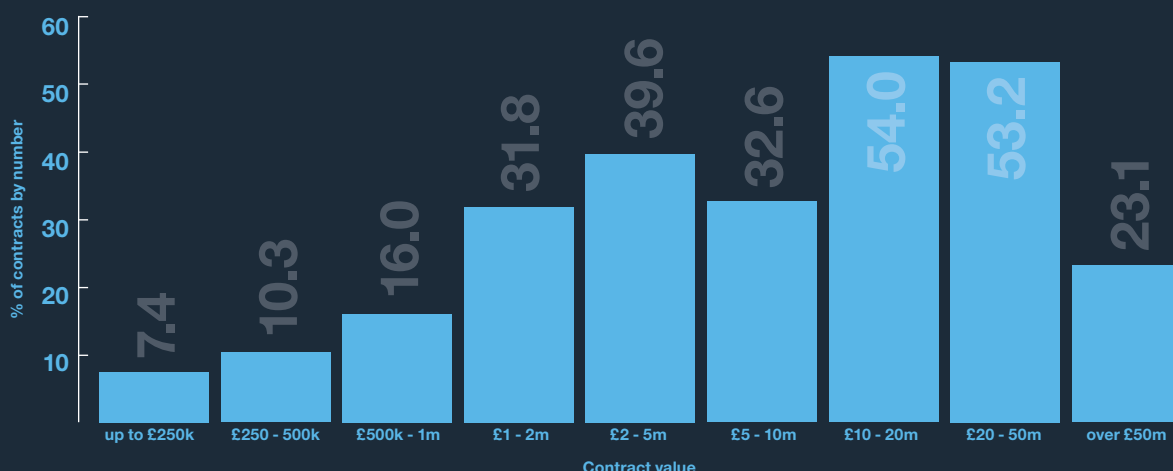
Design and Build procurement

Table 1 shows that, in terms of the number of building contracts undertaken in the UK, the design and build route has shown a significant increase. In the 2007 survey 21.8% of all contracts used a D&B route, up from 13.3% in the 2004 survey and the highest figure so far recorded in the survey's history. However, in value terms, 32.6% of the sample employed a D&B route, which was the lowest figure since 1995, since when the intervening three surveys have averaged 42.4%.

The following chart shows the percentage of each contract value band using a D&B procurement route and how over 50% of contracts in the £10–50m value range have used a D&B contract.

Chart 18:

Use of Design and Build procurement



In the 2004 survey, 87% of contracts in the £20-50m value range (13 out of 15 schemes) used Design and Build, whereas in the current survey, a much wider range of procurement options has been used on projects of this size including NEC target contracts (8 out of 47 schemes) and with quantities contracts (6 nr).

Table 7 shows that the JCT Design and Build Contract (or its 1998 predecessor) continues to dominate by far the field of Design and Build. The ICE Design and Construct form is more likely to be used on civil engineering contracts outside the scope of this survey and hence has recorded minimal use in this survey.

The 'Other Design and Build' category in the table represents, in the 2007 survey, 3 occurrences of the use of the JCT Major Project Construction Contract and 2 instances of the earlier 2003 Major Project Form.

Table 7:

Use of Design and Build Forms

	Percentage in Numbers				Percentage by Value			
	1998	2001	2004	2007	1998	2001	2004	2007
JCT With Contractor's Design	18.9	13.8	12.4	20.1	27.1	42.7	36.7	26.6
GC/Works Design & Build	0.2	0.0	0.4	1.1	0.2	0.0	5.7	2.2
ICE Design & Construct	0.4	0.0	0.0	0.2	9.6	0.0	0.0	0.1
Other Design & Build	1.3	0.0	0.6	0.4	4.6	0.0	0.8	3.7
TOTAL	20.7	13.9	13.3	21.8	41.4	42.7	43.2	32.6

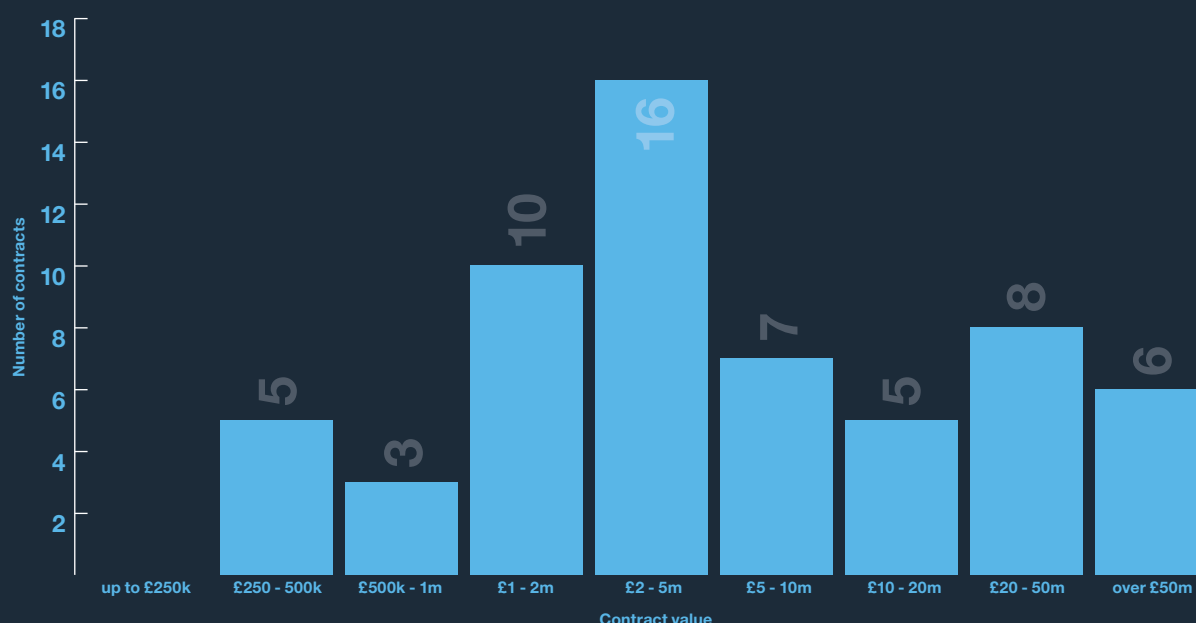
Note: Percentages adjusted to exclude 'Other Contracts'

Target Contracts

Although the proportion of NEC contracts used in the current survey was slightly higher than in 2004, the use of the target options fell. 4.5% of contracts sampled used a target contract (representing 7.6% of the sample value) compared to 6.0% by number and 11.6% by value in the 2004 survey. 58 of the target contracts were NEC (all with activity schedules) while 2 employed the ICE Target Cost Version. The 2 ICE examples were both in conjunction with contracts over £50m value.

Nevertheless, Target contracts were used on all project values except for contracts of less than £250,000 (see chart 19). In 2004 40% of NEC Target contracts were in conjunction with contracts below £250,000 value.

Chart 19:
Target contracts



Prime Cost Contracts

Prime Cost contracts are represented in the survey by the JCT Prime Building Cost Contract (and its earlier 1998 version the Prime Cost Contract) and the NEC Cost Reimbursable Contract. Their instances of use in the 2007 survey increased slightly but are still used on only a tiny minority of building contracts.

The survey recorded 5 instances of use of the JCT form (2005 edition) on contracts below £2m in value and 2 examples of the use of the NEC form on contracts between £2m and £10m value.

Management Contracts

Management contracts were used on 9 occasions, representing a slight increase on the numbers found in the 2004 survey. Six of them used the 2005 JCT Management Building Contract, all within the value ranges of £500,000 to £2m; two used the 1998 JCT Management Contract (£500,000 to £10m); while one used the NEC Option F: Management Contract (1995 edition) on a £20–50m project.

These numbers represent just 0.7% of contracts in the sample by number and 1.1% by value.

Construction Management

The use of construction management also showed a slight increase, up to 1.1% of the sample by number but a much more significant increase by value, up to 9.6% from just 0.9% in 2004. This is similar to the proportions found in 2001 and 1998.

Of the 15 instances of use of construction management, 12 used the 2005 JCT Construction Management Agreement and 3 the 2002 JCT Construction Management Documentation. No examples of use were found of the GC/Works/1 Construction Management form (as in 2004).

The use of construction management contracts was spread throughout all value ranges, including some very large projects which boosted the percentage by value to 9.6%. In the 2004 survey, CM was used only on projects below £5m in value, while, in the 2001 survey, all examples were in the £2m to £50m+ ranges.

Partnering

Agreements and Arrangements

Numerically, there has been a decline in partnering agreements compared to the 2004 survey, back from 2.7% of the sample to 2.3%. However, in value terms, 15.6% of the sample used some partnering agreement, up from 6.6% in 2004.

30 instances were recorded of the use of the ACA PPC 2000 Project Partnering form compared to 45 occasions in the last survey (though within a larger sample). The form was used on most contract values, although its predominant use was in mid-value contracts (see Chart 13).

The only other agreement under this heading was a single use of a Prime Contracting agreement. However, this was in connection with a very large value scheme and was responsible for boosting the value proportion of Partnering Agreements in Table 2.

The only other stand alone agreement that comes under this heading – the JCT Constructing Excellence Contract – failed to find any users in this survey.

The principle of partnering can be incorporated into most contractual arrangements and each of the contract families now has an additional document that parties to a contract can sign up to formalize the introduction of a partnering philosophy into the contractual arrangement.

The JCT introduced its Non-Binding Partnering Charter for Single Projects in 2001, supplanted by the Partnering Charter (Non-binding) 2005. This has not achieved great take-up: 11 instances were recorded of its use in 2004 (accounting for 0.6% of all JCT contracts recorded) but only 2 in the current survey (both in conjunction with relatively small (£500,000 to £1m) projects).

The ICE introduced its ICE Partnering Addendum in 2003 and failed to achieve any usage in the 2004 survey. A similar response occurred in the current survey though only 16 examples of ICE contracts were captured in the survey.

The NEC family of contracts has NEC Option X12: Partnering Option, introduced in 2001. In 2004, this option was used in 11% of cases where an NEC form of contract had been used. In the current survey, the Partnering Option was used 10 times, representing 9% of the cases where an NEC form had been used, suggesting no further movement in favour of partnering principles.

To emphasise this, the GC/Works/1 Amendment 1 (2000) (Achieving Excellence) was apparently not called upon in conjunction with any of the 83 recorded uses of GC/Works/1 contracts in a repeat of the 2004 survey results.

However, the survey questionnaire also sought to identify the use of other partnering arrangements, other than those specifically noted above, that may have been used in conjunction with standard forms of contract. In this respect 10 examples were noted of contracts incorporating binding Partnering Agreements (other than those specifically noted), on contracts up to £10m in value. But no examples were noted of contracts incorporating non-binding 'Partnership' or 'Alliance' provisions. This is a complete reversal of the situation found in 2004 when 31 non-binding provisions were recorded but just one binding partnering agreement.

The survey questionnaire also sought to identify any 'Other Partnering Agreements/Contracts specifically drafted for use in Partnering'. Whereas in 2004 this question solicited a further 11 project responses, no further instances were noted in the 2007 survey.

In total, the use of partnering agreements and arrangements increased markedly between the 2001 and 2004 surveys. In 2001 45 projects (1.5% of the total), worth a total £143m (4.3% of the total), were recorded as using some form of partnering. In 2004 the figures increased to 116 projects (5.0%) and £316m (10.4%). In 2007 the use of partnering appears to have passed its peak as only 53 projects (3.9% of the sample) employed a partnering contract or used some subsidiary partnering agreement. These 53 projects accounted for £1261m of work (15.8% of the sample) but only because of the inclusion of the high value Prime Contracting project: excluding this, the proportion of work by value falls to 7.1%.

Chart 20 shows the percentage of each contract value range using a Partnering Agreement or Arrangement. Contracts in the range of £5–10m are the most likely to have used some partnering arrangement.

Chart 20:

Partnering Agreements and Arrangements by contract value

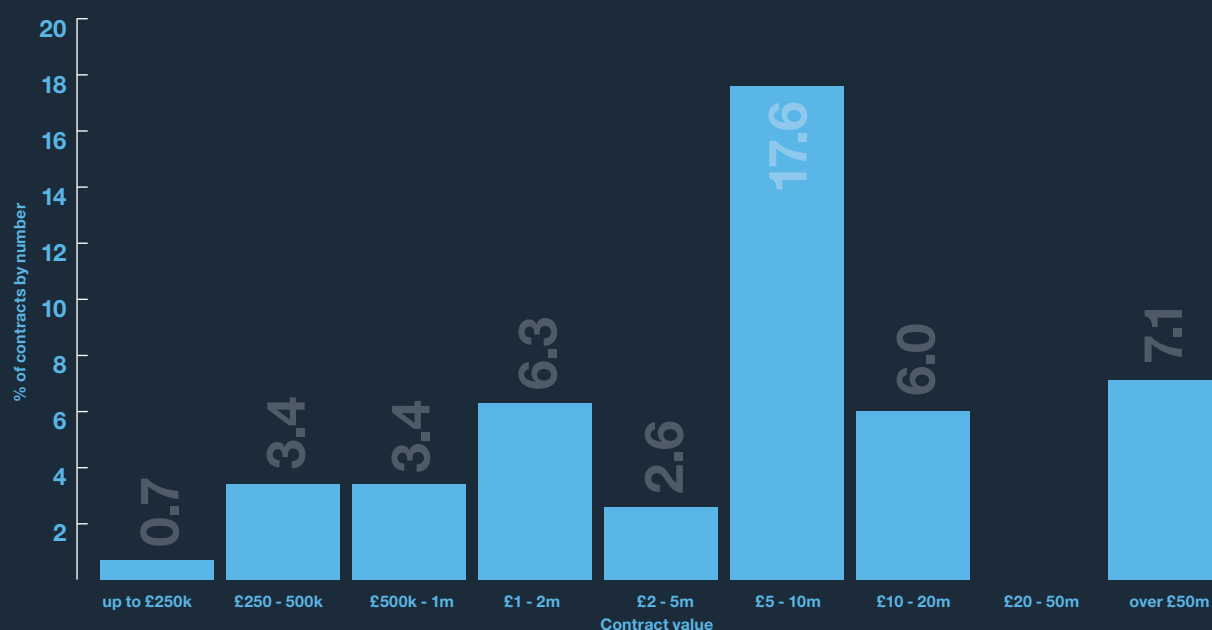
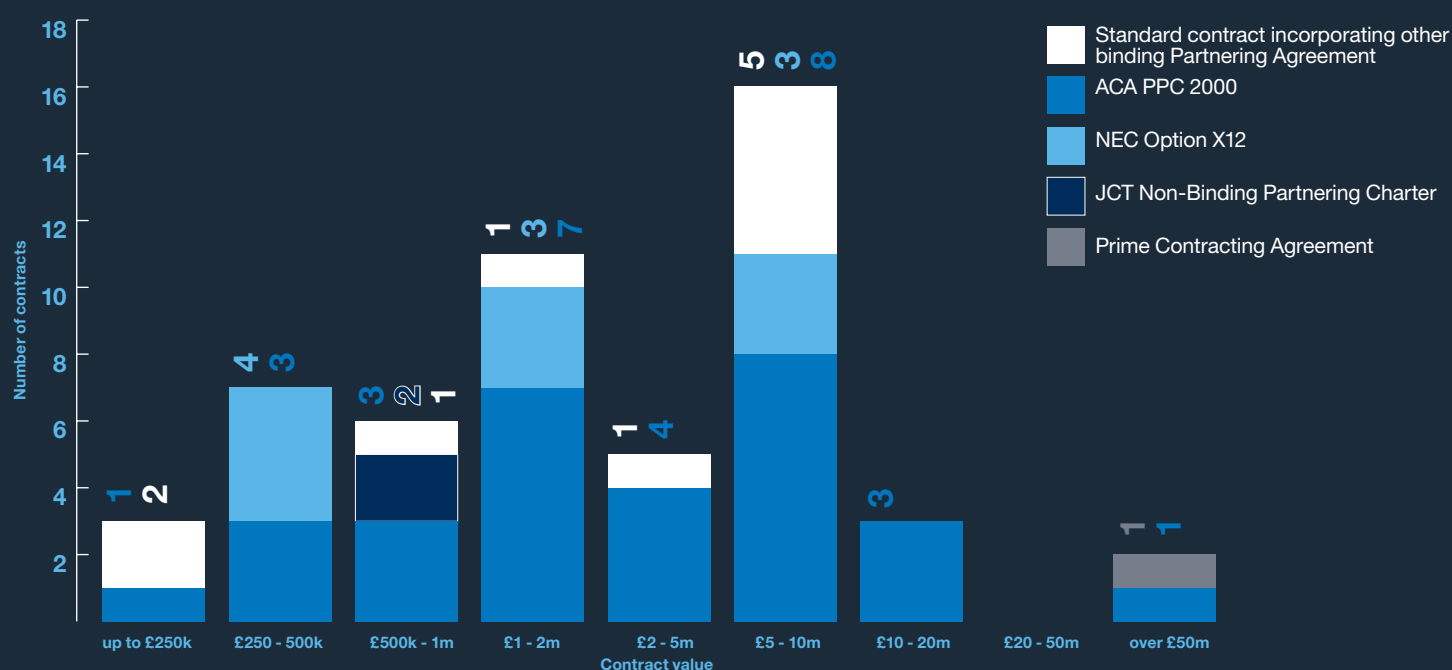


Chart 21 demonstrates the spread of the various forms of partnering by different contract values.

Chart 21:

Partnering Agreements and Arrangements by type



Appendix 1

Survey questionnaire

Notes on completion of questionnaire

In order to ensure that the information provided in the survey is valid, please ensure that the following rules are followed:

- 1 Include all projects for which work on site commenced during the year 1 January to 31 December 2007.
- 2 Include all building work carried out in the United Kingdom (new-build and refurbishment) but exclude term contracts, routine maintenance or repair work and individual sub-contracts.
- 3 Exclude all overseas work, civil engineering works and heavy engineering projects.
- 4 In the case of Management Contracts and Construction Management Agreements, base your returns on the total project value and ignore the number and value of individual trade contracts.
- 5 If you are completing this return on behalf of a public body, to avoid possible duplication, exclude all work handled by private Quantity Surveyors.
- 6 Insert the number of contracts in each value band and, for projects over £50m value, also state the value of those projects.
- 7 On page 5 of the survey form, you are requested to state the total number of projects and the approximate total value of those projects listed previously.
- 8 Also on page 5, you are requested to identify additional procurement options such as two stage tendering etc. which may be applicable to any of the preceding contract forms. Please do not overlook these additional questions, which are important to identify industry trends.
- 9 Please asterisk the numbers on the survey form which relate to contracts that incorporate significant amendments by yourself / your client. Please briefly indicate in the additional data section of the form the nature of the principal amendments.
- 10 PFI/PPP contracts – the value should be the capital (construction)) cost only. In order to prevent possible double counting, it would be helpful if you would note the names of PFI/PPP projects in the additional data section of the form.
- 11 Scotland –Separate contracts have not been identified in the Questionnaire for Scottish Building Contracts. Where JCT forms have been used with Scottish Supplements, please just mark the appropriate JCT form. Where forms such as the Scottish Minor Works Contract have been used, please mark its JCT equivalent, e.g. Agreement for Minor Works
- 12 On the final page you are invited to include any general remarks you have about procurement trends and current contract usage.
- 13 Please note that all information will be treated as confidential and will not be used for any other purpose

Appendix 2

The distribution of contracts in use

JCT Contracts

JCT 2005 Suite of Contracts

Form of Contract	Contract value									
	Up to £250k- (Nr)	£250k- £500k (Nr)	£500k- £1m (Nr)	£1m- £2m (Nr)	£2m- £5m (Nr)	£5m- £10m (Nr)	£10m- £20m (Nr)	£20m- £50m (Nr)	Over £50m (Nr)	Over £50m (£m)
Standard Building Contract 2005										
With Quantities (SBC/Q)	19	10	15	21	21	9	6	5	4	231
With Quantities without contractor's design (SBC/Q/XD)				4	3					
With Approximate Quantities (SBC/AQ)				1	1	1				
With Approximate Quantities without contractor's design (SBC/AQ/XD)		1	1	1	1	1	4			
Without Quantities (SBC/XQ)	4	6	7	4	3	5		1	3	180
Without Quantities without contractor's design (SBC/XQ/XD)			1	1	3					
Intermediate Building Contract										
Intermediate Building Contract (IC) with quantities	9	15	20	4	4	2				
Intermediate Building Contract (IC) without quantities	23	26	16	11	1					
Intermediate Building Contract with contractor's design (ICD) with quantities	1	3	11	1						
Intermediate Building Contract with contractor's design (ICD) without quantities	5	3	5	4	5			1		
Minor Works Building Contract										
Minor Works Building Contract (MW)	190	45	8	4						
Minor Works Building Contract with contractor's design (MWD)	25	11	2	1						
Design and Build Contract										
Design and Build Contract (DB)	27	14	16	28	44	17	18	14	2	120
Major Project Construction Contract										
Major Project Construction Contract (MP)				1				1	1	240
Construction Management										
Construction Management Agreement/Trade Contracts	2	1	1	1	2	2	1	1	1	87
Management Building Contract										
Management Building Contract			1	4				1		
Prime Cost Building Contract										
Prime Cost Building Contract (PCC)	1	1	2	1						

JCT 1998 Editions

Form of Contract	Contract value									
	Up to £250k- (Nr)	£250k- £500k (Nr)	£500k- £1m (Nr)	£1m- £2m (Nr)	£2m- £5m (Nr)	£5m- £10m (Nr)	£10m- £20m (Nr)	£20m- £50m (Nr)	Over £50m (Nr)	Over £50m (£m)
Standard Form										
With Quantities	2	9	6	5	16	4	1			
With Approximate Quantities								1		
Without Quantities	3	3	8	11	10	9	1	1	1	155
Supplements/Options	Please note numbers here in addition to the principal contracts above									
Contractor's Designed Portion Supplement	2	4	8	4	11	6				
Optional clause 30.4A Contractor's bond in lieu of Retention										
Intermediate Form of Contract										
IFC 98: Intermediate Form with quantities	3	5	7	5	2					
IFC 98: Intermediate Form without quantities	3	10	2	1						
Minor Building Works										
Agreement for Minor Building Works	31	5								
Standard Form With Contractor's Design										
With Contractor's Design	1	5	8	20	23	12	8	6	3	264
Management Contract										
Management Contract			1		1					
Prime Cost Contract										
Prime Cost Contract										

Other earlier JCT Forms

Construction Management Documentation 2002 Edition										
Construction Management Documentation						1			2	562
Major Project Form 2003 Edition										
Major Project Form		1			1					

Other later JCT Forms

Constructing Excellence Contract 2006										
Constructing Excellence Contract										0

Partnering with JCT

	Please note numbers here in addition to the principal contracts above									
Contracts above incorporating JCT Non-Binding Partnering Charter for Single Project (Practice Note 4: 2001) or JCT Partnering Charter (Non-binding) (PC/N) 2005			2							

ICE / NEC Contracts

ICE Forms of Contract

Form of Contract	Contract value									
	Up to £250k- (Nr)	£250k- £500k (Nr)	£500k- £1m (Nr)	£1m- £2m (Nr)	£2m- £5m (Nr)	£5m- £10m (Nr)	£10m- £20m (Nr)	£20m- £50m (Nr)	Over £50m (Nr)	Over £50m (£m)
ICE 6th edition (1991)		1	3	1	1	1	1			
ICE Measurement Version 7th edition (1999)	1				1					
ICE Design & Construct 2nd edition (2001)					3					
ICE Minor Works 3rd edition (2001)		1								
ICE Target Cost Version (2006)									2	120
Partnering with ICE	Please note numbers here in addition to the principal contracts above									
Contracts above incorporating ICE Partnering Addendum										0

NEC Family of Contracts

NEC3 Engineering and Construction (ECC) (2005)										
Option A: Priced contract with activity schedule	3	2	6	7	6	5		2		
Option B: Priced contract with bill of quantities			1	1	3				1	60
Option C: Target contract with activity schedule		5	3	6	3	1	2	3	3	292
Option D: Target contract with bill of quantities										
Option E: Cost reimbursable contract						1				
Option F: Management contract										
Short Contract (ECSC)	2	1								
NEC2 Engineering and Construction (ECC) (1995)										
Option A: Priced contract with activity schedule		1	1			2				
Option B: Priced contract with bill of quantities						1				
Option C: Target contract with activity schedule				4	13	6	3	5	1	60
Option D: Target contract with bill of quantities										
Option E: Cost reimbursable contract					1					
Option F: Management contract								1		
Short Contract (ECSC) (1999)										0
Partnering with NEC	Please note numbers here in addition to the principal contracts above									
Contracts above incorporating NEC Option X12: Partnering Option (2001)		4		3		3				
Contracts above used in conjunction with ProCure 21										0

GC/Works Contracts

Form of Contract	Contract value									
	Up to £250k- (Nr)	£250k- £500k (Nr)	£500k- £1m (Nr)	£1m- £2m (Nr)	£2m- £5m (Nr)	£5m- £10m (Nr)	£10m- £20m (Nr)	£20m- £50m (Nr)	Over £50m (Nr)	Over £50m (£m)
GC/Works (1998/1999 editions)										
GC/Works/1 With Quantities (1998)	1		1	1	2	1				
GC/Works/1 Without Quantities (1998)	2	3	1	4	2		1			
GC/Works/1 Single Stage Design & Build (1998)	1	1	1	5			1			
GC/Works/1 Two Stage Design & Build (1999)			1		1			4		
GC/Works/2 Minor Works (1998)	13	11	4		1					
GC/Works/4 Small Works (1998)	20									
GC/Works/1 Construction Management (1999)										
PC/Works (1998 editions)										
PC/Works/1-4 State version										
GC/Works/1 Amendments	Please note numbers here in addition to the principal contracts above									
Amendment 1 (2000) (Achieving Excellence)										

Other Contracts

Defence Estates										
Defcon 2000										
Authority's design										
Works Contractor's design										
Association of Consultant Architects										
ACA PPC 2000 Project Partnering (2000)	1	3	3	7	4	8	3		1	305
Other Standard Forms										
(Please state)			4		2	1		1	1	140
Other Contracts										
Local Authority's own forms	2		1							
Private client's own forms	3	5	7	2	6	1		1		
Others (please state)	4			2	2			1	1	60

Partnering Arrangements

Form of Contract	Contract value									
	Up to £250k- (Nr)	£250k- £500k (Nr)	£500k- £1m (Nr)	£1m- £2m (Nr)	£2m- £5m (Nr)	£5m- £10m (Nr)	£10m- £20m (Nr)	£20m- £50m (Nr)	Over £50m (Nr)	Over £50m (£m)
	Partnering arrangements in conjunction with standard forms									
Contracts above incorporating binding Partnering Agreements (other than those specifically noted)	2		1	1	1	5				
Contracts above incorporating non-binding 'Partnership' or 'Alliance' provisions (other than those specifically noted)										
Other Partnering Agreements	(for Partnering arrangements in conjunction with standard forms - see above)									
Prime Contracting agreement									1	750
Other Agreement/Contract specifically drafted for use in Partnering										

Total number and total value of projects recorded in this survey:

Total number of projects	1370 nr	Approximate total value of projects	7813 m
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Additional procurement questions

	Please note numbers here in addition to the principal contracts above									
Negotiated rather than tendered	11	23	22	37	22	9	3	7	3	
Fluctuations or Variation of Price provision						2				
Guaranteed Maximum Price (GMP) provision			2	5	4	3	2			
Two stage procurement strategy	2	9		4	7	4	9	6	6	
Additional incentivisation provision				3	1	2		2		
Employing electronic tendering	2		1	1		2				
Procured under framework agreement		5	4	22	21	7		2		
PFI/PPP										
Contracts above let under PFI/PPP arrangements										
Industry standard										
Bespoke										

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RICS has a worldwide network. For further information simply contact the relevant RICS office or our Contact Centre.

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9 Appendix B – Survey Forms



Survey of International Major Program / Program Execution & Contracting Strategies - Faithful+Gould - July 2010					
Project or Project Name (optional)		Industry:		Geographic Region	
Report completed by:		Date:		Owner Name or Type	e.g. International Oil Corporation
Program Budget at Sanction (USD)		Planned Duration	Months	Program Commencement Date	
Program Forecast Final Cost (USD)		Forecast Duration	Months	Contractor / Scope	
Key Drivers [state the key drivers for the program or project from the client's perspective]		Key Constraints / Challenges [state the key constraints and challenges for the program or project]		Key Risks & Mitigations [state the key risks and mitigations for the program or project]	
Project Development (To Sanction)		Design / Detailed Engineering		Major Equipment / Long Lead Item Procurement	
Contracting Relationships		Contracting Relationships		Contracting Relationships	
Client Role [specify the role performed by the client, e.g. project manager; project manager & designer; owner operator]	e.g. Who provided oversight - Owner or Owners/Consulting Engineer	Client Role [specify the role performed by the client, e.g. project manager; project manager & designer; owner operator]	e.g. Who provided oversight - Owner or Owners/Consulting Engineer	Client Role [specify the role performed by the client, e.g. project manager; project manager & designer; owner operator]	e.g. Who provided oversight - Owner or Owners/Consulting Engineer
Contractor Role [specify the role performed by the main contractor, e.g. design & build; design, build, operate; construction only]		Contractor Role [specify the role performed by the main contractor, e.g. design & build; design, build, operate; construction only]		Contractor Role [specify the role performed by the main contractor, e.g. design & build; design, build, operate; construction only]	
Commercial Relationships		Commercial Relationships		Commercial Relationships	
Contractor Reimbursement [specify the method of payment made to the main contractor at each project phase, e.g. fixed price; reimbursable; target cost with incentives]		Contractor Reimbursement [specify the method of payment made to the main contractor at each project phase, e.g. fixed price; reimbursable; target cost with incentives]		Contractor Reimbursement [specify the method of payment made to the main contractor at each project phase, e.g. fixed price; reimbursable; target cost with incentives]	
Commercial Variables		Commercial Variables		Commercial Variables	
Main Contractor Overhead		Main Contractor Overhead		Main Contractor Overhead	
Main Contractor Profit		Main Contractor Profit		Main Contractor Profit	
% Effort for Low Cost Engineering Center		% Effort for Low Cost Engineering Center		% Effort for Low Cost Engineering Center	N/A
Budget at Sanction (US \$ Billion)		Budget at Sanction (US \$ Billion)		Budget at Sanction (US \$ Billion)	
Forecast Final Cost (US \$ Billion)		Forecast Final Cost (US \$ Billion)		Forecast Final Cost (US \$ Billion)	
Planned Duration	Months	Planned Duration	Months	Planned Duration	Months
Forecast Duration	Months	Forecast Duration	Months	Forecast Duration	Months
Buls Materials Procurement (Supply & Delivery)		Construction		Commissioning	
Contracting Relationships		Contracting Relationships		Contracting Relationships	
Client Role [specify the role performed by the client, e.g. project manager; project manager & designer; owner operator]	e.g. Who provided oversight - Owner or Owners/Consulting Engineer	Client Role [specify the role performed by the client, e.g. project manager; project manager & designer; owner operator]	e.g. Who provided Scaffold & Construction Equipment	Client Role [specify the role performed by the client, e.g. project manager; project manager & designer; owner operator]	e.g. Was this Turnkey?
Contractor Role [specify the role performed by the main contractor, e.g. design & build; design, build, operate; construction only]		Contractor Role [specify the role performed by the main contractor, e.g. design & build; design, build, operate; construction only]		Contractor Role [specify the role performed by the main contractor, e.g. design & build; design, build, operate; construction only]	
Commercial Relationships		Commercial Relationships		Commercial Relationships	
Contractor Reimbursement [specify the method of payment made to the main contractor at each project phase, e.g. fixed price; reimbursable; target cost with incentives]		Contractor Reimbursement [specify the method of payment made to the main contractor at each project phase, e.g. fixed price; reimbursable; target cost with incentives]		Contractor Reimbursement [specify the method of payment made to the main contractor at each project phase, e.g. fixed price; reimbursable; target cost with incentives]	
Commercial Variables		Commercial Variables		Commercial Variables	
Main Contractor Overhead		Main Contractor Overhead		Main Contractor Overhead	
Main Contractor Profit		Main Contractor Profit		Main Contractor Profit	
% Effort for Low Cost Engineering Center	N/A	% Effort for Off Site Fabrication		% Effort for Low Cost Engineering Center	N/A
Budget at Sanction (US\$Billion)		Budget at Sanction (US\$Billion)		Budget at Sanction (US\$Billion)	
Forecast Final Cost (US\$ Billion)		Forecast Final Cost (US\$ Billion)		Forecast Final Cost (US\$ Billion)	
Planned Duration	Months	Planned Duration	Months	Planned Duration	Months
Forecast Duration	Months	Forecast Duration	Months	Forecast Duration	Months
Comments					

Range of Mark-Up as a percentage of overall cost - %

Categories	Original Plan	Trend
Professional Services		
Major Equipment		
Materials		
Construction		
Subcontracts		
Total		

Cost Deviation from original price - %

Categories	Trend
Professional Services	
Major Equipment	
Materials	
Construction	
Subcontracts	
Total	

Financial Ratios – Variable Cost/Fixed Cost

Categories	Original Plan	Trend
Professional Services		
Major Equipment		
Materials		
Construction		
Subcontracts		
Total		

Operational Ratios – Direct Labour/Indirect Labour

Categories	Original Plan	Trend
Professional Services		
Major Equipment		
Materials		
Construction		
Subcontracts		
Total		

Total Project Cost - \$

Categories	Original Plan	Trend
Professional Services		
Major Equipment		
Materials		
Construction		
Subcontracts		
Total		

Definitions

Professional Services	Cost associated to professional services such as engineering, environmental studies, project management, preliminary and detail design, etc
Major Equipment	Cost associated to the acquisition of major pieces of equipment such as tanks, vessels, pumps, calandria tubes, end fittings, etc.
Materials	Cost associated to the acquisition of construction material and consumables such as concrete, steel, parts, etc.
Construction	Cost associated to the construction work such as labor, rental equipment and field supervision.
Subcontracts	Cost associated to the acquisition of third party services such as facilities management, hydro blasting, vacuum cleaning, etc
Mark-Up	Rise on the acquisition cost for an item or service to embrace anticipated profits.
Variable Cost	The cost of professional services, major equipment, material or construction that changes according to the size of the project.
Fixed Cost	The cost of professional services, major equipment, material or construction that does not change in accordance to the size of the project.
Direct Labour	Wages of the personnel directly involved in the construction such as laborer, pipe fitter, welder, etc.
Indirect Labour	Wages of the personnel non directly involved in the construction such superintendent, supervisor, engineering field support, etc.

CONSTRUCTIVE EXPERTISE

FGOULD.COM

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MC-2015-239

FEB 05 2015

Mr. Tom Mitchell
President and Chief Executive Officer
Ontario Power Generation
700 University Avenue
Toronto ON M5G 1X6

Dear Mr. Mitchell:

I understand that Ontario Power Generation (OPG) will be engaging in collective bargaining discussions with the Power Workers' Union (PWU) shortly, and with the Society of Energy Professionals (Society) later this year. In advance of these discussions, I am writing to confirm that OPG will engage in negotiations that reflect a revised bargaining mandate that includes specified cost-savings objectives.

You may recall that in recent budgets the Province has expressed its commitment to manage the costs of public sector compensation, and to review electricity sector pensions, in particular. The Province is now looking to ensure there are savings achieved in the short and long term by minimizing the impact of compensation and pension costs to ratepayers across Ontario.

As you prepare for upcoming bargaining negotiations with the PWU and the Society, the government expects that the following bargaining mandate will form the basis for those discussions. Prior to entering into negotiations, please ensure that the mandate and requirement for government approval is made clear to the PWU and the Society. OPG's bargaining mandate comprises the following elements:

- Multiple year agreements (two to four years).
- Pension contributions from employees adjusted upwards gradually in order to achieve equal cost sharing between employers and employees.

.../cont'd

-2-

- While protecting all employee pension benefits earned under the plans to date, modestly reduce future service benefit accruals for current employees and new hires through a number of mechanisms that may include:
 - Adjustment of number of years upon which the calculation of final average earnings would be based;
 - Revising the points formula for the threshold for reduced early retirement;
 - Reducing bridge benefit before age 65; and/or
 - Basing indexation on a modestly reduced percentage of CPI.
- Introduce a model of shared governance of risk through a combination of:
 - Funded conditional indexation; and
 - Limiting employer funding for deficits arising under a new funding policy to a defined corridor, after which the funding policy would define how to address deficits.
- Where relevant, enable restructuring activities recommended by the Premier's Advisory Council on Government Assets and approved by government.
- The cumulative effect of the resolution of compensation issues would reflect an overall net neutral costing result. Any changes to pension contributions and benefits would not count as offsets for the purposes of calculating this net zero result.

I would appreciate confirmation that OPG's final negotiating mandates reflect the elements described above, as the company commences engagement with PWU and with the Society. I expect that OPG will provide regular updates to the Ministry on the status of negotiations and return to government for approval prior to finalizing any and all collective agreements.

Sincerely,



Bob Chiarelli
Minister

Ministry of Energy

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MAY 28 2015

Mr. Bernard Lord
Chair
Ontario Power Generation
700 University Avenue
Toronto ON M5G 1X6

Dear Mr. Lord:

I write in regard to the recently ratified, collective agreement negotiated between Ontario Power Generation (OPG) and the Power Workers' Union (PWU). I commend you and the PWU in arriving at a measured agreement that will have a favourable impact on electricity rates for years to come.

Treasury Board and Cabinet have concluded that the terms of the agreement align with the government's labour negotiating mandate, as outlined in my letter of February 5, 2015. The government is pleased that OPG and PWU found a path forward which protects the interests of electricity ratepayers while fundamentally transforming the nature of electricity sector compensation and addressing pensions.

Thank you again for your efforts culminating in this positive result.

Sincerely,

A handwritten signature in black ink, appearing to be 'Bob Chiarelli'.

Bob Chiarelli
Minister

c: Hon. Charles Sousa, Minister of Finance
Hon. Deb Matthews, President of the Treasury Board