

## **APPENDIX A - UPDATE TO YUB-YEC-1-4 (LNG SUPPLY)**

Yukon Energy has been informed by Shell Canada that it has decided not to proceed with its Jumping Pound LNG Plant. As a result Yukon Energy has implemented the contingency plan outlined in YUB-YEC 1-4.

Yukon Energy will now secure LNG supply from the FortisBC LNG facility at Tilbury (Delta BC) until such time as a lower cost source of LNG is available. Because the FortisBC is a favorable (and regulated) rate the impact on Project economics is not expected to be material.

YEC is also coordinating plans with NT Energy (who is currently securing LNG from FortisBC at Tilbury for use at Inuvik) to utilize NT Energy's Tridem units until such time as A-Train units are permitted. It is also working with NT Energy on other potential lower cost options.

More specifically, Yukon Energy has proceeded with the following plans regarding LNG supply for the Project:

1. **LNG supply from FortisBC:** Yukon Energy has met with FortisBC and has confirmed that LNG supply is available to meet Project requirements from the operating FortisBC facility at Tilbury. The rate will be Rate Schedule 46 as approved by the BCUC in accordance with BC Government OIC 557-13. The following points are noted:
  - The current Fortis operating capacity at Tilbury for LNG sale approximates 6,000 GJ/day (about 260 m<sup>3</sup>/day or 65,000 USG/day). Yukon Energy's current Base Case (no Alexco) forecast LNG requirement in 2015 averages approximately 15 m<sup>3</sup>/day (with peak month use in March at approximately 44 m<sup>3</sup>/day);
  - FortisBC is in the process of developing a materially expanded LNG supply capability at these facilities which is scheduled to be in service in 2016 i.e., in excess of 30,000 GJ/day (over 1,300 m<sup>3</sup>/day or 325,000 USG/day);
  - Aside from purchases that YEC currently plans to rely upon for winter 2014/15, FortisBC and YEC are in discussions on ways in which to accommodate YEC requirements under Contract Demand regulatory prices beyond the winter of 2014/15.
  
2. **LNG Supply Chain Development & Optimization with NT Energy:** Yukon Energy and NT Energy are working closely together to secure an efficient supply chain for LNG in the north by:

- Coordinating the planning, permitting and operation of appropriate LNG haul units that will optimize reliability, flexibility, safety and cost efficiency for LNG haul to both Inuvik and Whitehorse;
- Pursuing permitting of A-Trains to augment Tridem trailer capacity;
- Identifying potential synergies arising from aggregating demand and coordinating logistics;
- Entering into contingency arrangements to reduce the risks associated with variability in demand, supply and transportation; and
- Encouraging the development of an LNG supply source closer to Yukon and Northwest Territories.

YEC and NT Energy are examining plans for initial supply to YEC using NT Energy's Tridem units, with initial LNG shipping for YEC during commissioning and winter 2014/15.

As soon as A-Trains are permitted and available to YEC for LNG haul from the selected LNG supply source, NT Energy and YEC are planning to use these units for both YEC and NT Energy LNG supplies to Whitehorse at greatly reduced cost compared to reliance on Tridem units.

3. **Active consideration of other potential near-term LNG supply options:** YEC and NT Energy are actively reviewing together potential new LNG supply sources located closer to Yukon and Northwest Territories for late 2014 and beyond.

Two specific examples are outlined below:

- **AltaGas:** AltaGas has announced a five-year plan to build a regional LNG business to approximately 500,000 USG/day with investment of approximately \$250 million. It has stated that it is moving forward with the initial \$22 million LNG project in Dawson Creek that could be supplying LNG as early as late 2014<sup>1</sup>. YEC and NT Energy are in discussions with AltaGas and are actively reviewing potential LNG supply arrangements from AltaGas' Dawson Creek facility. Such an option when compared to the Fortis Tilbury LNG facility is estimated to reduce haul costs to Whitehorse by approximately \$2.9 /MMBtu for A-Train units and by approximately \$3.7/MMBtu for Tridem units.

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<sup>1</sup> Comments by AltaGas Chairman and CEO, David Cornhill, Q4-2013 Results conference call on February 27, 2014. The full transcription can be found in the attached link. [http://altagas.ca/investors/presentations\\_and\\_events](http://altagas.ca/investors/presentations_and_events)

- **Ferus:** Ferus is another potential source of LNG supply. YEC and NT Energy are in active discussions with Ferus which is currently commissioning an LNG plant at Grande Prairie (about 50,000 USG/day capacity). Ferus has also announced another 100,000 USG/day plant scheduled to be in operation in 2016 (Edmonton), and is considering similar scale near-term projects at its Grande Prairie facility and potentially at Fort Nelson.

Overall, using Rate Schedule 46 contract energy from FortisBC, YEC's updated estimate for LNG delivery to Whitehorse from Tilbury with A-Trains is basically the same cost as (or slightly lower than) the costs estimated for supply from a Shell Jumping Pound plant using A-Train units.

Using NT Energy's Tridem unit costs to secure and deliver LNG to Whitehorse would be about \$1.78/MMBtu (1.5 c/kW.h at 40% conversion efficiency) more expensive than the estimated cost for supply from Shell with A-Trains.

For example, using an AECO index gas price of \$4.50/MMBtu and gas conversion efficiency at 40% (as per the Application), the following comparative updated delivered LNG costs estimates to Whitehorse are provided:

- Delivered cost estimate from Fortis Tilbury in 2015<sup>2</sup>:
  - Using A-Train units (95.3 m<sup>3</sup> per unit net payload), estimated cost of \$16.44/MMBtu [\$14.0 c/kW.h]; and
  - Using Tridem units (60.0 m<sup>3</sup> per unit net payload), estimated cost of \$18.29/MMBtu [\$15.6 c/kW.h].
- Delivered cost estimate from Calgary (if Shell had been in operation with YEC's Shell contract)<sup>3</sup>:
  - Using A-Train units (95.3m<sup>3</sup> per unit net payload), estimated cost of \$16.51/MMBtu [14.1c/kW.h]; and
  - Using Tridem units (60.0 m<sup>3</sup> per unit net payload), estimated cost of \$18.54/MMBtu [\$15.8 c/kW.h].

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<sup>2</sup> Gas supply assumed at \$4.50/MMBtu AECO price plus \$0.30/MMBtu for differential at Sumas versus AECO. The Fortis spot rate in 2015 is estimated at \$5.05/MMBtu (approved rate of \$4.60/GJ plus inflation assumed at 2%/year in 2014 and 2015). LNG haul cost at \$8.44/MMBtu for Tridem units and \$6.59/MMBtu for A-Train units (\$5.99/MMBtu in YUB-YEC-1-44(a) plus 10% for initial low utilization).

<sup>3</sup> Unchanged from YUB-YEC-1-4(a-b), except Tridem unit cost at \$7.50/MMBtu (60 m<sup>3</sup> payload) plus 5% for potential initial low utilization for non-Vancouver LNG supply locations.

The attached Table 1 and Figure 1 update Table 4-3 and Figure 3-1 in the Application to reflect the ratepayer cost impacts in the initial years of the Project (2015 to 2018).

The attached tables confirm that the Project as updated continues to provide ratepayer cost savings in each of the initial four years of the Project. Projected ratepayer fuel cost savings from the Project compared to the new diesel generation option over the four initial years are approximately \$11.9 million - savings well in excess of the incremental annual capital cost charges of approximately \$2.7 million over this same period for the Project compared to new diesel, and also in excess of the total gap in capital costs of \$9.3 million between the Project and the New Diesel Alternative.

The Project's economics remain very robust over its 40 year economic life assuming that delivered LNG fuel costs continue to remain below diesel fuel costs.

Table 1

Table 4-3 Updated: Ratepayer Impacts from Whitehorse Diesel-Natural Gas Conversion Project - Supply From Fortis at Tilbury BC (\$million) (Project compared to New Diesel Alternative)

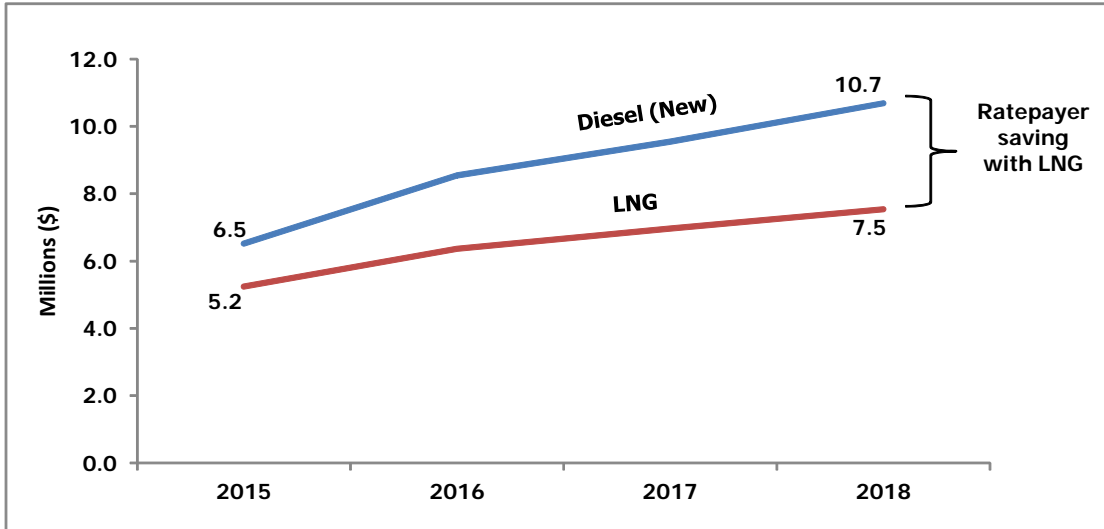
		2014	2015	2016	2017	2018
<b>Capital cost (\$million) at yr end</b>						
Total	Diesel (new)	21.60	11.10			
	LNG	36.50		5.50		
Net	Diesel (new)	21.60	32.2	31.4	30.6	29.8
	LNG	36.5	35.6	40.2	39.2	38.1
<b>Annual Capital Cost (\$million)</b>						
Deprec	Diesel (new)		0.516	0.794	0.794	0.794
	LNG		0.899	0.899	1.036	1.036
Return	Diesel (new)		1.466	1.732	1.689	1.646
	LNG		1.965	2.066	2.163	2.106
Total	Diesel (new)		1.982	2.526	2.483	2.440
	LNG		2.863	2.964	3.199	3.143
<b>Difference (LNG-Diesel)</b>			<b>0.882</b>	<b>0.438</b>	<b>0.716</b>	<b>0.703</b>
<b>Annual Fuel Cost (\$million)</b>						
Forecast LTA Diesel (GWh)			17	22.9	26.9	31.4
% New	Diesel (new)		90%	100%	100%	100%
	LNG		100%	95%	100%	100%
Fuel Cost	Diesel (new)		4.541	6.014	7.064	8.246
	LNG		2.380	3.398	3.766	4.396
<b>Difference (LNG-Diesel)</b>			<b>-2.161</b>	<b>-2.616</b>	<b>-3.298</b>	<b>-3.850</b>
<b>Net Ratepayer Impact (\$million)</b>						
	Diesel (new)		6.522	8.540	9.547	10.685
	LNG		5.243	6.362	6.965	7.539
<b>Difference (LNG-Diesel)</b>			<b>-1.279</b>	<b>-2.178</b>	<b>-2.582</b>	<b>-3.147</b>

## Notes:

1. Updated capital costs per YUB-YEC-1-1(d), YUB-YEC-1-13(a), YUB-YEC-1-14(c-d) and YECL-YEC-1-6(b). All capital costs depreciated over 40 years; return on mid-year rate base at 5.45%/year.
2. Updated diesel fuel costs at 26.3 c/kWh new diesel (Whitehorse), 30.8 c/kWh other diesel (grid average), per YUB-YEC-1-13(a) and YUB-YEC-1-42(c)
3. LNG delivered fuel costs at 14.0 c/kWh (assumes supply from Fortis at Tilbury, BC at an AECO gas price of \$4.50 per MMBtu plus \$0.30/MMBtu [to reflect Sumas equivalent price] and using A-Train units for delivery to Whitehorse with updated haul cost of \$6.59/MMBtu [\$5.99/MMBtu plus 10% for initial low utilization]). [YUB-YEC-1-44]
4. Forecast LTA Default Diesel (GW.h) for Base Case (no Alexco).

Figure 1

Figure 3-1 Updated: Annual Ratepayer Costs - LNG vs New Diesel: 2015-2018  
(Supply from Fortis at Tilbury BC)



Annual Ratepayer Cost for Capital & Fuel (\$million per year)

	2015	2016	2017	2018
Diesel (New)	6.5	8.5	9.5	10.7
Gas/LNG	5.2	6.4	7.0	7.5
Saving (Diesel-LNG)	1.3	2.2	2.6	3.1

**APPENDIX B**  
**INFORMATION ON YUKON ENERGY PANEL**





**PROFESSIONAL EDUCATION/DESIGNATION:**

Master of Arts, Public Administration, Carleton University, 1986  
Leadership Challenge, Banff School of Management, 1998  
Negotiation for Senior Executives, Harvard Business School, 2004  
Chartered Director Designation, Conference Board of Canada, 2006

**EMPLOYMENT HISTORY:**

**2004 – Present**                      **President and Chief Executive Officer, Yukon Energy Corporation, and  
Chief Executive Officer, Yukon Development Corporation**

Responsible for the day to day management of the two Corporations. Completed construction of a new transmission line. Established new contracting and procurement standards and systems. Established training program for Directors and new corporate governance systems. Completed special examination audits for Yukon Energy. Developed and established new financial management and accountability systems for the corporations. Developed and implemented new business planning and budgeting processes. Negotiated new financing arrangements for the reduction of high cost debt. Established new management reporting and information standards.

**2003 – 2004**                      **Chairman, Yukon Energy Corporation, Yukon Development Corporation  
& Energy Solutions Centre Inc.**

Chair Board of Directors of the three Corporations with a Mandate to: review existing systems and establish new Governance systems; undertake a review of financial management systems and implement new systems; resolve capital project management problems and implement new systems; implement Board Governance training and Director development program.

**2001 – 2003 and  
1989 – 1995**                      **President, Morrison & Associates, Management Consultants**

Provided consulting services focusing on issues of governance, public sector and privatization, regulatory and advisory issues, and private sector corporate operations. Clients included: the City of Ottawa, Northwest Territories Power Corporation, Northern Canada Power Commission, Office of the Auditor General of Canada, Ft. McKay First Nation, Government of Yukon, Government of Northwest Territories, the Whitehorse Chamber of Commerce, Praxair Canada, Strathcona County, and Foothills Pipelines.

**1995 – 2000**

**Vice- President of Operations, Tirecraft Auto Centers Ltd.**

Responsible for the day-to-day management and profitability of Corporate stores for retail tire Chain with 135 stores across Canada and sales of \$180 million annually. Overall Corporate responsibility for: Strategic Planning, Commercial Sales, Marketing, Supplier Relationships, Human Resource Management, Training, Credit, Inventory Management, Property Management, MIS and implementation of a corporate e-commerce strategy.

**1987 – 1988**

**Assistant Chairman Northern Canada Power Commission**

Responsible for the operation of \$250 million electric public utility with 400 employees and 56 generating plants located throughout the Northwest Territories and Yukon. Led the Company through a turnaround and to profitability. Successfully negotiated several collective agreements. Negotiated the privatization/sale of the Company. Managed staff transition and change to a new Collective Bargaining unit. Prepared and implemented re-organization, staff consolidation and relocation plan.

**1981 – 1987**

**Corporate Secretary and Special Advisor to the Chairman Northern Canada Power Commission**

Responsible for all Board related matters including: Strategic Planning, Major Contract negotiations, Risk and Property Management, Corporate Policies, and Regulatory Affairs. Secretary of the Board and Principal Advisor to the Chairman and Members of the Board. Responsible for all Intergovernmental liaison including; Federal Regulatory filings, negotiations with Federal Treasury Board, Department of Finance and Indian and Northern Affairs.

**1980 – 1981**

**Principal Secretary to the Premier Government of Yukon**

Principal advisor to the Government Leader and Caucus. Interfaced between Government leader and general interest groups. Acted as a liaison with local and national media. Acted as a liaison with senior federal and provincial government officials. Prepared speeches and policy papers. Provided advice and guidance on all government programs. Appeared before Parliamentary Committees on behalf of the Government. Managed Government's legislative and policy agendas.



**PROFESSIONAL EDUCATION/DESIGNATION:**

B.Sc. Mechanical Engineering, University of Calgary, 1974  
Professional Engineer designation, Alberta 1976  
Professional Engineer designation, Yukon 1990  
Information Systems Professional designation, 2002  
Master of Business Administration, Athabasca University, 2009

**EMPLOYMENT HISTORY:**

- 2006 – Present**                      **Director, Resource Planning & Regulatory Affairs, Yukon Energy**  
Responsible for generation and transmission planning and studies, environment, permitting and stakeholder engagement for resource plans and all major generation and transmission projects. Member of Yukon Energy management team.
- 2000 – 2006**                         **Director, Planning, Business Development & CIO, Yukon Energy**  
Responsible for generation and transmission planning, stakeholder engagement, business development with existing and new industrial customers, integrated resource plans and information systems. Member of Yukon Energy management team.
- 1997 – 2000**                         **Director, Operations, Yukon Energy**  
Responsible for the operation and maintenance of all generation, transmission and distribution assets. Member of Yukon Energy management team.
- 1990 – 1997**                         **Manager of Energy Supply, Yukon Electrical Company Ltd**  
Responsible for capital, operating and maintenance programs for all power plants in Yukon, including the facilities owned by Yukon Energy. Yukon Electrical was managing the assets of Yukon Energy during this period. Member of Yukon Electrical management team. Involved in all Yukon Electrical YUB applications and hearings from 1990 to 1997.
- 1987 – 1990**                         **Superintendent of Plant Engineering, Alberta Power Battle River Power Station**  
Responsible for a 750 MW power station capital plan and engineering activities. Member of station management team.

- 1981 – 1987**                    **Senior Control and Instrumentation Engineer, Shawinigan-Integ Inc (SII) Consulting Engineers**  
Lead responsibility for detailed instrumentation and control design of a new 800 MW coal fired power station for Edmonton Power (now EPCOR).
- 1976 – 1981**                    **Telecontrol Department and Instrumentation Engineer positions for APL**  
Hardware and software commissioning and support of SCADA systems. Design of instrumentation and control systems for a new 375 MW coal-fired generation unit for Alberta Power.
- 1974 – 1976**                    **Systems Programmer, J.H. Schwartz & Associates**  
Real-time systems programmer for telecommunication and electric utility applications.

**EDUCATION:**

M.A. (Economics), Simon Fraser University, 1968  
University of Toronto Law School, 1964-1965  
B.A. (Philosophy), University of Manitoba, 1964

**PROFESSIONAL HISTORY:**

**InterGroup Consultants Ltd.**

**Winnipeg, Manitoba**

1974 - Present

Founding partner and Chair & CEO of InterGroup Consultants Ltd. (formerly InterGroup Consulting Economists Ltd.); President to 2007.

2000 - 2006

Director, CBT Energy Inc.

Strategic planning and multi-disciplinary project team management experience, based on resource and regional economics expertise relating to mining, energy (particularly hydro-electric generation and renewable liquid energy fuels), and downtown tri-government urban development projects.

Detailed project experience is outlined below separately under each of the following headings:

- Socio-Economic and Environmental Assessment & Related Public Consultation – Mining, Hydro-electric, Forestry and Other Major Projects
- Strategic Planning & Multi-disciplinary Project Team Management – Resource, Regional and Urban Development Projects
- Compensation and Monitoring Related to Resource Project Impacts
- Utility Regulation – Expert Analysis and Testimony at Hearings
- Resource Rent, Royalty and Tax Policy – Related Expert Evidence
- Other Strategic Planning and Assessment

***Socio-Economic and Environmental Assessment & Related Public Consultation – Mining, Hydro-electric, Forestry and Other Major Projects***

- **For Manitoba Hydro (1999-Present)**, Study Leader responsible for socio-economic assessment and planning work in a multi-disciplinary Consultant Management Team retained to assist Manitoba Hydro in the conduct of the environmental assessment programs associated with future planning for three potential

hydroelectric generating stations in northern Manitoba (Wuskwatim, Keeyask and Conawapa), including site selection and environmental assessments for the associated transmission facilities. Provided expert testimony before the Manitoba Clean Environment Commission on the Wuskwatim Generation and Transmission Projects EISs submitted by Manitoba Hydro and Nisichawayasihk Cree Nation. The Wuskwatim Generation and Transmission Projects have been constructed (the Wuskwatim Generation Project was developed by the Wuskwatim Power Limited Partnership of Nisichawayasihk Cree Nation and Manitoba Hydro). The Keeyask Project is currently under regulatory review. The Conawapa Project is currently in the environmental assessment planning stage.

- **For Manitoba Hydro (2011-2012)**, senior advisor regarding environmental assessment approach, including significance and cumulative effects assessment, for the EIS filing of the proposed Bipole III Transmission Project. Provided expert testimony on this project before the Clean Environment Commission.
- **For Yukon Energy Corporation (2008-2012)**, Project Principal regarding 10+ MW Mayo B Hydro Enhancement Project activities related to preparation of YEC Project Proposal Submission to the Yukon Environmental and Socio-economic Assessment Board Executive Committee and the YEC Application to the Yukon Water Board, and related planning activities leading to construction of this project, including negotiation of Project Agreement with First Nation of Na-cho Nyak Dun, process to select and finalize Alliance construction contractor (Kiewit), preparation of Public Utilities Act Part 3 Application for Mayo B and provision of expert testimony on this Application to the Yukon Utilities Board, and participation in ongoing oversight of project implementation activities (the project came into service before the end of 2011).
- **For Yukon Energy Corporation (2005-2008)**, Project Principal regarding 138 kV Carmacks-Stewart Transmission Project activities related to preparation of YEC Project Proposal Submission to the Yukon Environmental and Socio-economic Assessment Board Executive Committee, negotiation of purchase power agreement with mine customer to be served by this project and Project Agreement with three Northern Tutchone First Nations, provision of expert testimony on this project to the Yukon Utilities Board, and participation in ongoing oversight of project implementation activities (Stage 1 of this project came into service in late 2008, Stage 2 came into service in mid-2011).
- **For Manitoba Floodway Authority (2003-2005)**, senior advisor regarding environmental assessment and licensing activities of the proposed Red River Floodway Expansion Project. Provided expert testimony before the Manitoba Clean Environment Commission on EIA study approach, including cumulative effects assessment,

regarding the Project EIS submitted by the Manitoba Floodway Authority.

- **For Yukon Energy Corporation (1992-2002)**, advisory reviews of environmental impact assessment work for re-licensing of the Aishihik hydro-generation facility and related expert testimony before the Yukon Territorial Water Board.
- **For uranium mining companies in northern Saskatchewan during the 1990's**, project director for consultants regarding socio-economic impact assessment, economic impact and cost-benefit assessments, and public consultation design and implementation for the Rabbit Lake expansions (Cameco Corporation, 1991-1993), the McArthur River developments (Cameco Corporation, 1993-1996), the Cigar Lake developments (Cigar Lake Mining Corporation, 1993-1996), and the Rabbit Lake extension (Cameco Corporation, 1999-); provided related evidence and expert witness testimony for the Rabbit Lake federal environmental review panel hearing and the McArthur River developments federal-provincial environmental review panel hearings. Provided advisory review for InterGroup's similar socio-economic and economic impact assessments, and public consultation work for COGEMA related to Cluff Lake mine projects during this period.
- **For Cameco, Cigar Lake Mining Corporation and COGEMA (1993-1994)**, facilitation of an agreement in principle for an impact management agreement involving seven Athabaska communities (this was one element of the socio-economic/public consultation EIS work related to the McArthur River and CLMC projects).
- **For Repap Manitoba, Inc. (1989-1991)**, project management of the socio-economic impact assessment, and design and implementation of an extensive public consultation program, for the proposed Phase 1 Manitoba expansion.
- **For aggregate producers in Ontario during the 1980's and early 1990's**, socio-economic impact and resource policy evaluations relating to proposed aggregate developments in southern Ontario (Puslinch, Milton and Niagara Escarpment Planning Area); provision of resource economics expert testimony before the Ontario Municipal Board on behalf of TCG Materials Limited and on behalf of Armbro Aggregate.
- **For the City of Winnipeg in the 1990's**, socio-economic impact assessment for the new Charleswood and Main/Norwood bridge developments (two separate assignments; provided advisory review for other InterGroup principals who directed this work, as well as assistance in coordination of hearing testimony for the regulatory review of the Charleswood bridge project).

- **For the Moosonee Development Area Board (early 1990's)**, socio-economic counsel in an intervention relating to potential impacts of Ontario Hydro's proposed hydro generation development of the Moose River Basin.
- **For Manitoba Hydro in the late 1980's and 1990's**, senior advisory review as required by other InterGroup principals carrying out the following assignments: socio-economic impact assessment and public consultation program for the Conawapa hydro generating station EIS (1989-1993); socio-economic impact assessment and public consultation program for the Split Lake transmission line project (joint study with the First Nation, early 1990's); socio-economic impact assessment and public consultation program for the siting and the EIS related to the Winnipeg-Brandon transmission line and Neepawa substation projects (1995-1997); study to review environmental externality and compensation cost modeling for hydro-generation and related transmission line projects (1996-1997). Deputy Project Director for initial environmental assessments study for third Bipole Transmission Lines (1986-1987).
- **For Manitoba Hydro in the early-to-mid 1980's**, various investigations with respect to the environmental and socio-economic impacts related to planning of new power generation projects in northern Manitoba, including deputy project director for the Burntwood River Environmental Overview Study (1980-1984), and review of InterGroup's work (carried out by senior staff) to prepare the socio-economic assessment and conduct public consultation for the Limestone hydro-electric generating station EIS.
- **For Alcan in the early 1980's**, management of investigations with respect to the socio-economic impacts of a proposed aluminum smelter in Manitoba.
- **For Key Lake Mining Corporation in the early 1980's**, expert testimony before the Commission of Enquiry on socio-economic impacts associated with the uranium project at Key Lake.
- **For Amok Ltd., in the 1977 Saskatchewan hearings on uranium developments**, provided expert testimony before the Bayda Commission of Enquiry on socio-economic impacts associated with the Amok mining project at Cluff Lake.

***Strategic Planning & Multi-disciplinary Project Team Management –Resource, Regional and Urban Development Projects***

- **For Yukon Energy Corporation (2005 - present)**, project director for various strategic planning activities, including: preparation of Yukon Energy's 2006 20-Year Resource Plan Submission to the Yukon Utilities Board (provided expert testimony before the YUB) which lead to the Carmacks-Stewart Transmission

Project and other developments; senior advisor to 2007-2008 update team assessing near-term hydro generation enhancement options for potential in-service by 2012 (lead to selection of Mayo B Project as well as Gladstone, Atlin and Marsh Lake projects for near-term development); overall strategic planning for development of the Carmacks Stewart Transmission Project and the Mayo B Hydro Enhancement Project (see resume for these projects under Socio-Economic and Environment Assessment and Related Public Consultation); preparation of Yukon Energy's 2011 20-Year Resource Plan: 2011-2030 which reviewed a wide range on new resource options, including near-term liquefied natural gas (LNG) development and long-term legacy hydro development planning; participation in Yukon Energy's Part 3 Application and review by the Yukon Utilities Board for the Whitehorse Diesel-Natural Gas Conversion Project.

- **For the City of Winnipeg and Neeginan Development Corporation (1998)**, project director responsible for preparation of the Development Plan for the Thunderbird House project on Main Street.
- **For Spirit of Manitoba Inc. and Manitoba Entertainment Complex Inc. (1994-1995)**, responsible for management of all aspects of a project to develop a new downtown entertainment complex and to retain the Winnipeg Jets Hockey Club in Winnipeg; managed the multi-disciplinary team carrying out negotiations, siting, design, costs, feasibility planning, environmental assessments, and other work required to secure approvals under tight deadlines specifically for the new arena component of the project.
- **For The Forks Renewal Corporation (a corporation owned by Canada, Manitoba and Winnipeg) during the late 1980's and early 1990's**, Development Coordinator responsible for planning and directing initial development and financial activities (1987-1993), including negotiation of land exchange agreements, preparation of a Phase I Concept and Financial Plan, site planning and Stage One projects, roads and services; ongoing financial and strategic planning counsel.
- **For Government of Yukon (Department of Economic Development, Mines & Small Business) (1985-1987)**, management of multi-disciplinary team carrying out financial, economic, legal and strategic planning work relating to the devolution and transfer to Yukon of the Northern Canada Power Commission assets and operations in Yukon; participation in all related negotiations.
- **For the East Yard Task Force (comprised of the governments of Canada, Manitoba and Winnipeg) (1985-1986)**, general advisor and manager for all consultant work (planning and

architectural, engineering, financial and legal) related to the redevelopment of a major rail yard area in downtown Winnipeg.

- **For North Portage Development Corporation (1984-1987)**, economics and financial counsel during the initial development phase; coordinator for work relating to corporate financial plans, selection of major developers (retail, housing and office projects), and negotiation of long-term agreements (land lease, development and other related agreements) with each of the selected developers.
- **For Canadian Methanol Canadien during the 1980s**, participation in an executive capacity in a partnership venture involving Inter-City Gas Corporation and The M100 Group to develop methanol vehicle fuel [management of multidisciplinary project team involving engineers, planners, financial, legal, and other professionals to demonstrate and develop hybrid (natural gas and wood feedstock) methanol production facilities as well as different market uses for methanol (including use in flexible fuel passenger vehicles)].
- **For the Government of Canada in the late 1970's**, project director of a major multi-disciplinary study to examine the feasibility of producing liquid fuels (including methanol) from biomass feedstock resources throughout Canada; this study included examination of liquid fuel production options involving the joint use of either electricity or natural gas along with biomass feedstock. The multi-disciplinary consulting team included firms with chemical engineering and forestry expertise.

#### ***Compensation & Monitoring Related to Resource Project Impacts***

- **For Tsay Keh Dene First Nation (2001-2009)**, expert socio-economic and resource economics assistance with respect to settlement negotiations concluded with BC Hydro and the Province of British Columbia relating to impacts on the Tsay Keh Dene First Nation from the Williston Reservoir developments in the 1970s (AIP reached in 2006); related advice regarding the Peace Water Use (WUP) process and contracting arrangements for Tsay Keh WUP reservoir-related contracts with BC Hydro.
- **For Kwadacha First Nation (2001-2008)**, expert socio-economic and resource economics assistance with respect to settlement negotiations concluded with BC Hydro and the Province of British Columbia relating to impacts on Kwadacha First Nation from the Williston Reservoir developments in the 1970s (AIP reached in 2006; Final Agreement reached in 2008).
- **For Manitoba Hydro in the 1990's**, expert socio-economic and resource economics assistance with respect to claims by the community of South Indian Lake (early 1990's) and by Northern

Flood Agreement communities, including the Cross Lake First Nation (1999-Present), related to post-project development impacts from hydroelectric power development.

- **For uranium mining companies (1999)**, project director for the preparation of a draft work plan for a community vitality monitoring program for northern communities in Saskatchewan affected by uranium mining development; the work plan requirement arose out of federal-provincial environmental impact panel hearings on the McArthur River and Cigar Lake mining projects; the work plan was prepared for a working committee with representatives from the three uranium mining companies (Cameco Corporation, COGEMA, and Cigar Lake Mining Corporation), the Saskatchewan Northern Mines Monitoring Secretariat, and the northern Saskatchewan Health Districts.
- **For BC Hydro (early 1990's)**, evaluation of a trust fund proposed to compensate five Lillooet Nation Bands for damages from hydroelectric generation and transmission activities.
- **For the Beaufort Sea Steering Committee (early 1990's)**, review of wildlife compensation program options in the event of an oil spill in the Beaufort Sea.
- **For Manitoba Hydro (1989-1990)**, project management of an independent post-project evaluation of the Grand Rapids Project impacts on Aboriginal communities, including direction of the socio-economic component of the evaluation.

***Cost of Service and Rates – Expert Analysis and Testimony at Hearings***

- **For the Yukon Energy Corporation (1989-Present)**, expert testimony before the Yukon Utilities Board on planning major capital projects (1992) and on electricity costing and rates related to rate applications by Yukon Energy Corporation (1989, 1991, 1993, 1996, 1997, 1998, 2005, 2008-09, 2012-13 and YEC-YECL 2009 Phase II Application).
- **For Newfoundland Industrial Customers (2001 and 2003)**, expert testimony before the Board of Commissioners of Public Utilities of Newfoundland and Labrador on electricity costing and rates related to general rate applications by Newfoundland Hydro.
- **For the Manitoba Industrial Power Users Group (1987-1999)**, expert testimony before the Manitoba Public Utilities Board in Manitoba Hydro electricity rate hearings, including rate applications in 1987/88, 1989, 1990, 1991, 1992, 1994, 1995, and 1998, and the Manitoba Hydro Major Capital Projects hearing in 1990. Represented MIPUG at hearings before the Board in 1999 to approve the purchase of Centra Gas by Manitoba Hydro.

- **For the Bruce Municipal Telephone System in the early 1990's**, expert economic evidence to the Ontario Telephone Service Commission related to the cost of equity capital.
- **For Government of Yukon, expert testimony before the National Energy Board in 1985**, expert testimony on costs and rates pertaining to the Northern Canada Power Commission.
- **For IPSCO during the 1980's**, expert testimony before Saskatchewan Utilities Regulatory Commission hearing on the first and second rate applications by Saskatchewan Power Commission.
- **For Stelco, INCO and the Motor Vehicle Manufacturers' Association of Canada, in the 1977-1979 Ontario Energy Board hearings HR5**, examining Ontario Hydro's electricity costing and pricing principles; provided consulting advice and expert testimony on the issues and options pertaining to that hearing.
- **For a consortium (The Consumers' Gas Company, Union Gas, Northern and Central Gas and the Ontario Ministry of Energy), a 1974 report on natural gas requirements throughout Canada**; provided expert testimony before the National Energy Board on this report.

***Resource Rent, Royalty and Tax Policy – Related Expert Evidence***

- **For Regional Municipality of Ottawa Carleton (RMOC) in the mid-1990's**, expert resource and regulatory economist evidence before the Ontario Municipal Board on By-Law 234/92, which imposed compensation payments on private landfill operators in the Region.
- **For a group of pipeline companies in Ontario (1989-1992)**, assistance with coordination of expert evidence in an arbitration, and provision of expert evidence on methodology to determine annual rent for pipeline use of a transmission corridor owned by Ontario Hydro.
- **For Sun Oil in the 1970's**, counsel on preparation of a brief to the Government of Canada on the proposed Federal Land Regulations for Oil and Gas Lands.
- **For the Canadian Potash Producers' Association in the 1970's and early 1980's**, expert assistance with taxation discussions with Saskatchewan authorities, analysis of the proposed government takeover of the potash industry, and liaison with legal counsel.
- **For the Uranerz-Inexco joint venture in the 1970's**, participation in discussions between the Saskatchewan Government

and the uranium industry concerning uranium taxation revisions; provided economic counsel for these discussions.

- **For the Mining Association of British Columbia in the 1970's**, expert testimony before the Commission of Enquiry into property taxation in that province.
- **For the Mining Association of Canada in the 1970's**, preparation of analytical models for comparison of different mineral taxation structures.
- **For Canadian Industrial Oil and Gas Ltd. in the 1970's**, analysis of the public policy aspects of Saskatchewan Bill 42 relating to taxation (advice to legal counsel related to a court case).

#### ***Other Strategic Planning and Assessment***

- **For the Yukon Energy Corporation and the Yukon Development Corporation (1987-Ongoing)**, financial and strategic planning counsel on major issues, including rate policy planning (see also Utility Regulation), major capital planning issues (see also Environmental Assessment and Strategic Planning), management agreement arrangements, negotiations in the 1990s between YEC and various owners of the Faro mine, negotiation in 2006-2007 of Power Purchase Agreement (PPA) with Minto Explorations Ltd. and ongoing activities to amend the Minto PPA and to negotiate PPAs with other mines (including Alexco Resource Corp.).
- **For Manitoba Hydro (1999-early 2000s)**, assistance on various matters, including policy reviews related to debris management programs and planning related to US market consultations.
- **For the Northern Manitoba Economic Development Commission (1991-1992)**, participation in the preparation of two reports, contributing to the Commission's Sustainable Economic Development Plan for Northern Manitoba for the 1990s.
- **For Regional Municipality of Ottawa Carleton (RMOC) during the 1990's**, economic assessments of options to extend the life of the Trail Road Landfill site.
- **For Metropolitan Toronto (late 1980's)**, economic analysis of the best available technology for the utilization of the landfill gas resources at the Keele Valley Landfill site.
- **For a western energy company (early 1990's)**, preparation of a Cost-Benefit Analysis of a 160 MW co-generation project, assessment of the implications of the project for Manitoba Hydro, and participation in the discussions between the company and Manitoba Hydro.

- **For Western Economic Diversification (late 1980's)**, assessment of Winnipeg tri-government development corporation cash flow scenarios.
- **For the Government of Manitoba during the late 1980's and early 1990's**, advice and assistance in the preparation of proposal calls for the redevelopment of a historically significant site in Winnipeg, as well as participation in the developer selection and negotiation process.
- **For the Canadian Electrical Association in the late 1970's**, management of interdisciplinary team investigations with respect to the impacts of proposed federal atmospheric emission control guidelines on Canadian electrical generating industry thermal power stations.

**Hedlin Menzies/Acres Consulting Services  
Hedlin Menzies & Associates Ltd.**

**Winnipeg, Manitoba**

1968 - 1974

Research Economist/*Manager and Senior Consultant*

Project manager of major studies involving regional resource and cost-benefit impact policy issues relating to prairie manufacturing, prairie elevator and transportation rationalization, Manitoba Hydro northern development activities, Canadian energy requirements and research and development priorities, alternative export policies for natural gas, Canadian Merchant Marine development options, alternative rail route options in the Yukon and northern British Columbia, and various mineral resource policy options pertaining to mining development and taxation.

Sessional lecturer on mineral economics for one year at the University of Manitoba's Natural Resources Institute.

**RESEARCH PAPERS:**

"The Process of Urbanization in Canada, 1600-1961." Simon Fraser University (M.A.) Thesis. 1968.

"Technological Change and the Economics of Agricultural Development." Simon Fraser University (M.A.) Thesis. 1968.

"Economic Analysis of Short-Term Alternatives Regarding Southern Indian Lake in Manitoba" (joint work with Dr. A.M. Lansdown, P.Eng., 1969).

"A New National Development Policy for Canada: The Relevance of Western Canada." Prepared for the Liberal Conference on Western Objectives. 1973.

"Canada's Gains and Losses from Oil Export Taxes" (joint work with Dr. R.W. Fenton, 1973).

"Resource Management Factors Influencing Mineral Development in North Central Canada." Paper presented to the annual western meeting of the Canadian Institute of Mining and Metallurgy, Winnipeg, October 7, 1974.

"Energy, Provincial Rights and Canadian Unity." 1973.

"An Evaluation of 'An Energy Policy for Canada' " (joint work with Dr. R.W. Fenton, 1973).

"Resource Management Factors Influencing Manitoba Mining." Natural Resources Institute, University of Manitoba. 1974.

"Liquid Fuels from Renewable Resources in Canada: Systems Economic Studies." Paper presented to the Institute of Gas Technology Symposium on Energy from Biomass and Wastes, Washington, DC. August 1978.

"Canadian Scenario for Methanol Fuel." Paper presented to the Alcohol Fuels Technology Third International Symposium, California, January 1979.

"Socio-Economic Impacts from Potential Canadian Methanol Fuel Development." Paper presented to the IV International Symposium on Alcohol Fuels Technology, Brazil. October 1980.

"Canadian Methanol Development Using Natural Gas and Wood Feedstocks." Paper presented to the First IEA Conference on New Energy Conservation Technologies and their Commercialization, Berlin. April 1981.

"Methanol as an Alternative Automotive Fuel: CMC's Approach and Experience." Paper presented to the West Coast International Meeting of the Society of Automotive Engineering, Vancouver, BC. August 1983.

"Status of CMC Fuel Methanol Production and Market Development Programs." Paper presented to the VI International Symposium on Alcohol Fuels Technology, Ottawa. May 21-25, 1984.

"Diesel & Thermal Electricity Generation Options." Background Paper for Yukon Energy Corporation Energy Planning Charrette, Whitehorse, March 6-9, 2011. Related presentations at the Energy Charrette: "Loads and Role of Diesel" and "Thermal Generation Options".

"LNG - Transition Fuel Option for Yukon." Paper presented at Yukon Energy LNG Workshop, Whitehorse, January 18, 2012.