

PAUL R. WILLIS, P.ENG, CMVP

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SUMMARY

Paul Willis has more than 30 years experience in the energy field. This experience encompasses energy management, marketing, research and development, project management, detailed and conceptual design, and commissioning and acceptance. He has participated in the implementation of a number of thermal power projects from detailed design work to arranging power sale contracts. He has designed and assisted in the implementation of a number of Industrial Demand Side Management programs. He is President of Willis Energy Services Ltd., an engineering consulting firm that works with large energy users to improve efficiency, with utilities and government agencies to promote conservation and with Independent Power Producers to implement power projects. His technical expertise is in the areas of heat transfer, combustion, industrial process systems, and the optimization of large power and heating systems.

PROFESSIONAL AFFILIATIONS

- Professional Engineers and Geoscientist of BC
- American Society of Heating, Refrigeration and Air-conditioning Engineers
- Canadian Institute of Energy
- Independent Power Association of BC
- Association of Energy Engineers

PROFESSIONAL EXPERIENCE

President and Founder, Willis Energy Services Limited

Vancouver, British Columbia (1988 – Present)

As President, Paul is responsible for overall management of a large number of projects involving energy efficiency, including:

- The design and implementation of efficiency programs for electric and natural gas utilities;
- Energy and resource audits of commercial and industrial facilities;
- Energy purchasing assistance;
- Energy management planning for energy users;
- Resource efficiency seminars; and
- Implementation of a variety of resource efficiency projects.

<i>Category</i>	<i>Clients</i>	<i>Summary Description of Work</i>
Energy Audits	BC Hydro Terasen Gas Tolko Industries University of British Columbia Western Pulp	Paul has participated in a large variety of audits at a variety of types of industrial facilities. These audits involve assessing how energy is used, the identification of energy efficiency options and a recommended implementation plan.
Efficiency Program Design	BC Hydro FortisBC Portland General Electric	Paul has worked with several electric and gas utilities, assisting them in the development of programs, which would assist their customers to become more resource efficient. These programs have involved a variety of technologies, including electric motors, adjustable speed drives, fans, pumps, compressed air and natural gas to electric water heaters.
Resource Efficiency Potential	BC Hydro Terasen Gas Fortis BC BC Government	Paul has worked on a number of government and utility projects in assessing the resource potential in the industrial sector. One such project involved assessing the resource potential for six major industrial sectors in Canada; other projects involved working with electric and gas utilities to estimate the energy saving potential for different efficiency initiatives under different economic scenarios.



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Independent Power Producers & Cogeneration Analysis	Tolko Industries Montenay Inc. Green Island Energy Dokie Wind Energy	Paul has assisted independent Power Producers in navigating the BC Hydro call for tender process. Successful examples including large and small wood waste and Wind sourced project. Paul has analyzed a large number of cogeneration projects involving natural gas, biomass and process gas for projects in size from 25 kW to 400,000 kW. This analysis included technical and economic reviews.
Economic Research	Canadian Electrical Association	Paul has conducted and participated in a number of research and development projects in the energy management area for the Canadian Electrical Association.

Program Manager, BC Hydro

Vancouver, British Columbia (1986 – 1988)

Managed a program designed to sell surplus interruptible electricity to industrial customers. This assignment required assessment of the value of this surplus electricity to BC Hydro and sales of this product at a profit to industrial customers.

Energy Management Engineer, BC Hydro

Vancouver, British Columbia (1982 – 1986)

Provided advice to industrial customers in the area of industrial process heating, particularly heat recovery equipment, boiler systems and large heat pumps. In this function, organized a number of energy management seminars and trade shows.

Project Engineer, BC Hydro

Vancouver, British Columbia (1976 – 1982)

Member of a team for technical work in a pressurized fluidized bed development project. Over a period of four years, became thoroughly acquainted with all design aspects of fluidized bed technology as applied to utilizing low-grade coal. Responsible for a large scale test program involving BC Hydro using another utility's boiler to test burn 6,000 tons of coal from an untried deposit, and for the development of specifications for a 560 MW steam generator to burn a low grade coal that had not been previously used for power generation.

Participated in extensive planning and design work for 2,000 MW coal fired project at Hat Creek.

Participated in the investigation of large coal gasification and liquefaction study using Hat Creek Coal.

Planning Engineering, BC Hydro

Vancouver, British Columbia (1975 - 1976)

Worked as a Generation Planning Engineer in BC Hydro's Generation Planning Department evaluating a number of thermal power options.

Design Engineer, BC Hydro

Vancouver, British Columbia (1974 - 1975)

Participated in commissioning and was responsible for an acceptance and efficiency test of a 160 MW oil and gas fired steam generator.



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Proposal Engineer, Babcock and Wilcox

Cambridge, Ontario (1972 - 1974)

Responsible for the conceptual design and cost estimate of steam generators for a number of power plants including coal fires units in New Zealand and Thailand.

Design Engineer, Babcock and Wilcox

Cambridge, Ontario (1970 - 1972)

As part of the boiler design department, performed combustion, heat transfer, fluid flow, piping flexibility and structural steel design calculations.

EDUCATION

Degree, Bachelor of Science, Mechanical Engineering

University of Waterloo, Ontario

REFERENCES

Available on request.

