

David F. Shipley, P.Eng.

Experience Overview

Over 20 years of experience as an energy engineer. Areas of expertise include:

- conservation and demand management potential estimates for energy utilities,
- building energy modelling,
- building commissioning,
- building energy systems,
- energy efficiency,
- renewable energy,
- energy and environmental systems modelling,
- demand-side management, and
- industrial equipment procurement.

Technical lead of the recent conservation and demand management study for the two utilities serving Newfoundland and Labrador, and the achievable conservation potential study for Ontario Power Authority and for subsequent studies to develop tailored estimates for individual Ontario LDCs. Coordinated the residential sector analysis for conservation potential studies for electric and gas utilities in six provinces and developed modeling tools used for analysis by the commercial and industrial teams in these studies. Conducted market studies on building commissioning, HVAC and lighting technologies for commercial buildings, and efficient equipment for industry.

Selected experience

Managed projects both from the client side and as a contractor. Developed strong skills in management of collaboratives, guiding groups with diverse objectives towards coherent strategies. Created detailed scopes for projects and programs, including budgets and schedules. Managed competitive bid solicitations to select contractors, and negotiated contracts. Authored reports and presented results in both prepared and extemporaneous presentations.

2011 -
Present [ICF International](#)

Ottawa,
ON

Senior Technical Specialist

Responsible for technical and analytical components of projects within ICF's energy practice, including:

Energy End Use Forecasting

- *Fortis BC End Use Load Forecast, FortisBC, 2012 to 2014.*
Developed an end-use based load forecasting system for FortisBC, using detailed customer data and models built for an earlier conservation potential study. The model can forecast account growth and consumption of five fuels under five economic scenarios, over a twenty-year period, for three sectors, six regions, 33 rate classes, 36 building types, and 29 end uses. The model can also estimate potential for conservation programs and report on the sensitivity of the potential to different economic scenarios.

Conservation Potential Studies

- *Conservation and Demand Management Study- Newfoundland Power and Newfoundland Labrador Hydro, 2014 to 2015.*
Technical lead on modeling and analysis of economic and achievable potential for conservation and demand management in Newfoundland and Labrador. Led the residential analysis and was principal model developer.
- *Tailored Achievable Potential Studies for Ontario LDCs: Hydro One Networks, NPEI, Powerstream, Horizon Utilities, Thunder Bay Hydro, Waterloo North Hydro, Entegrus, Canadian Niagara Power, Algoma Power, Brantford Power, Milton Hydro, Oakville Hydro, Oshawa PUC, Haldimand County Power, Halton Hills Hydro, Burlington Hydro, Brant County Power, 2014-2015.*
Developed tailored versions of the OPA achievable potential model (see the project immediately below), to provide detailed conservation potential estimates for the service territories of several Ontario LDCs.
- *Achievable Potential Study-Ontario Power Authority, 2013.*
Led the analysis of conservation potential for all

sectors, deriving much of the economic potential from outputs of OPA's End Use Forecaster model, but applying data from ICF Marbek's internal databases to estimate achievable potential. After a market characterization phase targeting the application of measures in Ontario, produced a fine-tuned estimate of achievable potential.

- *Conservation Potential Study for Yukon Government, YEC, and YECL, 2011.*
Led residential analysis of conservation potential, including developing detailed end-use baseline profiles calibrated to utility data, deriving economic potential for cost-effective actions in the residential sector, and forecasting 20-year economic and achievable savings.
- *Conservation Potential Study for Terasen Gas, 2010-2011.*
Led residential analysis of conservation potential, including developing detailed end-use baseline profiles calibrated to utility data, deriving economic potential for cost-effective actions in the residential sector, and forecasting 20-year economic and achievable savings.
- *Conservation Potential Study for SaskPower, 2010-2011.*
Led residential analysis of conservation potential, including developing detailed end-use baseline profiles calibrated to utility data, deriving economic potential for cost-effective actions in the residential sector, and forecasting 20-year economic and achievable savings.

Market Characterization Studies

- *Market Characterization of the Commercial/Institutional and Residential Sectors in Yukon, YEC and YECL, 2012.*
Prepared initial program focus assessment documents, based on results from the Conservation Potential Study. Assisted in planning and preparing interview guides for market research, and conducted interviews. Provided input to program concept documents, which will lead to commercial and residential programs offered by the Yukon utilities.

2000 - [Marbek Resource](#)
2010 - [Consultants](#) (Redirects to ICF website. ICF acquired Marbek 1 Jan 2011.) Ottawa, ON

Senior Consultant

Responsible for technical and analytical components of projects within Marbek's energy practice, including:

DSM Potential Study for Enbridge Gas

- Studied the potential from EnergyStar windows.
- Developed the residential energy savings potential estimate as part of a full DSM potential study for the Enbridge service territory.

Review of DSM Potential Studies for New Brunswick and Hydro Quebec Provided review of two DSM potential studies prepared by New Brunswick Power and by Hydro Quebec.

Sustainable Subdivision for Iqaluit

Participated in a design charrette for a sustainable subdivision in the city of Iqaluit. Developed the business case for an energy standard for new homes in the city.

Multi-Unit Residential Building Tune-ups

Developed a tune-up manual for multi-unit residential buildings, targeted at building owners and operators. Measures targeted building envelope, HVAC, lighting, appliance, and other end uses.

DSM Study: BC Hydro

Estimated potential savings from residential demand-side management for BC Hydro, as part of a project to estimate potential for all sectors. Derived detailed end-use baseline profiles calibrated to utility data, derived economic potential for cost-effective actions in the residential sector, and forecast savings over 15 years.

DSM Study: Manitoba Hydro

Estimated potential savings from residential demand-side management for Manitoba Hydro, as part of a project to estimate potential for all sectors. Process similar to that of above project.

Assessing the GHG Impact of Technology and Innovation Projects: Buildings and Communities

Conducted some of the analysis to estimate GHG impacts of projects proposed for funding under the federal Technology and Innovation R&D initiative.

Greenhouse Gas and Clean Air Impacts of Green Municipal Projects

Conducted some of the analysis to estimate GHG and clean air impacts of projects funded by the Federation of Canadian Municipalities' Green Municipal Fund.

Energy Conservation Potential in ORC Buildings

Analyzed Ontario Realty Corporation building stock, to estimate potential and target efforts for energy conservation. Estimated the GHG reduction impacts from a slate of measures.

Review of Commissioning Processes and Tools

Assessed the Canadian marketplace for commissioning of commercial buildings, using available literature and targeted interviews. Profiled commissioning tools currently in use and the market for future tools. Provided recommendations for tool development.

RCMP: GHG Inventory Updates

Updated the inventory of GHG emissions from RCMP facilities three times after the initial estimate for the Federal House in Order projected listed below.

OERD - Evaluation

Provided technical expertise to evaluate R&D programs on distributed generation technologies for NRCAN's Office of Energy Research and Development.

LIGHT - ESCO Business Plan

Analyzed consumption data on over 19,000 utility customers for a Brazilian electric utility, to identify key customer segments and business potential for a new ESCO subsidiary.

FCM Peer Review

Reviewing energy efficiency proposals under the Federation of Canadian Municipalities' Green Municipal Funds initiative.

ETC Energy Management Plan

Produced a comprehensive energy management plan for the Environmental Technology Centre, a lab/office building owned by Environment Canada.

Federal House in Order

Developed archetype models for commercial buildings for federal government departments including RCMP, National Research Council, Transport Canada, and Department of Fisheries and Oceans. Estimated potential for energy savings and associated greenhouse gas emission reductions for building stock.

1993 - [Energy Center of Wisconsin](#)
2000

Madison,
WI

Project Manager

Managed projects with budgets ranging from \$30,000 to \$300,000, including:

- *Load Management Using Energy Management Control Systems in Buildings* - managed contractor modelling Wisconsin's population of large commercial buildings to estimate potential demand savings and then field-testing the approach.
- *Building Commissioning: Survey of Attitudes and Practices in Wisconsin* - co-managed this project to research the commissioning market, including providing technical direction and review of survey instruments and deliverables.
- *Commissioning of Commercial Buildings* - delivered introductory training sessions to architects and building owners.
- *Compressed Air Systems* - managed contractor developing a Screening Tool, using Excel spreadsheet models.
- *WisconSUN* - managed a program to promote solar energy systems in Wisconsin, including marketing, infrastructure development, and technology demonstrations.
- *Zone Pressure Diagnostics for Weatherization of Homes* - managed the collaborative development of a protocol for using pressure diagnostics to identify needed weatherization measures.
- *Comparative Study of Residential Heating Systems* - Completed an economic study of ground-source and air-source heat pumps versus conventional residential heating and cooling systems
- *Water-Loop Heat Pump Controller* - initiated field testing project for an advanced water loop heat pump controller
- *Ice Bear Thermal Storage System* - initiated field testing project for a thermal storage system sized for packaged cooling equipment
- *Biopulping* - managed pre-commercial trial of fungal pretreatment of wood chips for mechanical pulping to save 35% of energy.
- *Market Assessment & Process Energy Baseline for Foundries.*
- *Market for Natural Gas Vehicles in Wisconsin.*

- Managed the Energy Center Computer Support Department.

1991 - Resource Management Associates Madison,
1993 WI

Energy Engineer

- Responsible for technical support to the Emergency Energy Program for Eastern and Central Europe.
- Specified and procured approximately \$1 million/year of industrial energy auditing and energy efficiency equipment, and coordinated its delivery to the field.
- Provided company liaison with U.S. vendors, on-site overseas contractors, representatives from over twenty audit sites in Romania, Czechoslovakia, Lithuania, Ukraine, Belarus, and Armenia.
- Travelled to Armenia to evaluate a proposed solar water heating system for the World Bank, and to specify weatherization materials for several Yerevan schools, hospitals, and apartment blocks for U.S. Agency for International Development.
- Edited industrial plant audit reports prepared in the field by teams of industrial auditors.
- Travelled to Singapore and Thailand to co-lead workshops on solar crop drying.
- Served as Acting Director of Business Development with responsibility for coordinating efforts to research new project possibilities and prepare project proposals.

1987 - WATSUN Simulation Waterloo,
1991 Lab, [University of Waterloo](http://www.uwaterloo.ca/~watsun/) ON

Managing Engineer

Managed the WATSUN Simulation Lab at the University of Waterloo, directing the activities of a combination university research lab, consulting firm, and software house. Authored, documented, and supported several FORTRAN programs that simulate solar energy systems. Won funding and negotiated contracts for the lab, supervised students, customized programs, and managed large software projects. Administered the Lab's

VAX/VMS, XENIX, IBM-compatible, and Macintosh computers.

Education

1987 [University of Sussex](#) United Kingdom

Master of Science in Energy Studies

Areas of focus included technology options, energy and science policy, renewable energy, and energy in rural development. Thesis title: "The Diffusion of Energy Technologies in Third World Villages."

1986 [University of Waterloo](#) Ontario

Bachelor of Applied Science in [Mechanical Engineering](#)

Specialized in thermo-fluids, with [Management Science Option](#).

Awards & Professional Affiliations

- Won the 1998 United States Department of Agriculture--Forest Service Chief's Award for Excellence in Technology Transfer
- Professional Engineer in [Ontario](#)
- Member of [ASHRAE](#)

Volunteer Activities

- Corresponding Member of ASHRAE's SPC 207P (Laboratory Method of Test of Fault Detection and Diagnostics Applied Commercial Air-Cooled Packaged Systems) and also chair of [SPC 207P's Website](#) Subcommittee
- Corresponding Member of ASHRAE's TC 7.9 (Building Commissioning) and also chair of [TC 7.9's Website](#) Subcommittee; also chair of the Research Subcommittee
- Corresponding Member of ASHRAE's TC 7.1 (Smart Building Systems)

Other Work History

- Research Assistant, [University of Waterloo](#), 1985 to 1986
- Industrial Engineering Trainee, [MITEL Corporation](#), 1983
- Industrial Engineering Trainee, [Develcon Electronics Ltd.](#), 1982
- Drafting Trainee, [Develcon Electronics Ltd.](#), 1981
- Farm Labourer, George Xalkiadakis Farm, Ierapetra, Crete, Greece, 1980
- Carrier, [Saskatoon Star Phoenix](#), 1975 to 1977

