



Canadian
Electricity
Association

Association
canadienne
de l'électricité



Electricity Pricing

An Introduction to Canadian Electricity Rates





Canadian Electricity Pricing - Introduction

- Canada benefits from amongst the lowest rates of electricity worldwide. Global statistics show that Canadians pay average electricity prices that are lower (and in many cases substantially lower) than most other industrialized countries of the world. These lower prices pay for a system that is as reliable as any in the world, and that is much cleaner than most – with more than 75 per cent of our electricity supply coming from sources, like hydro and nuclear, that emit virtually no greenhouse gases associated with climate change.
- Canadian current electricity prices are influenced by a variety of driving factors including; fuel sources, customer service, electricity supply, operation and maintenance, finance, the electricity system's upheaval and improvements, regulatory requirements and energy efficiency.



Glossary of Terms

Base Load	The minimum continuous load over a given period of time. Base load generating stations operate essentially at full output whenever possible.
Cogeneration	The simultaneous production of power and thermal energy. Such systems have great potential in industry, where a significant requirement for electricity is coupled with a large demand for process steam.
Consumption:	Use of electrical energy, typically measured in kilowatt hours.
Conventional Generation	Electricity that is produced at a generating station where the prime movers are driven by gases or steam produced by burning fossil fuels.
Consumer Price Index	Measure of change in the price level of consumer goods and services purchased by households. The CPI is a measure of the average change over time in the prices paid by urban consumers for a market basket of consumer goods and services.
Demand Charge	The component of a two-part price for electricity that is based on a customer's highest power demand reached in a specified period, usually a month, regardless of the quantity of energy used (e.g., \$2.00 per kilowatt per month). The other component of the two-part price is the energy charge.
Dispatchable Generation	Sources of electricity such as natural gas that can be dispatched at the request of power grid operators; that is, output can be increased or decreased as demand or availability of other supply sources changes.
Distribution	A distribution system carries electricity from the transmission system and delivers it to consumers. Typically, the network would include medium-voltage power lines, substations and pole-mounted transformers, low-voltage distribution wiring and electricity meters
Energy Charge	The component of a two-part price for electricity which is based on the amount of energy taken (e.g., 20 mills per kWh). The other component of the price is the demand charge.
Feed – in – Tariff (FIT)	A guaranteed rate program that provides stable prices through long-term contracts for energy generated using renewable resources
Generation	The process of converting thermal, mechanical, chemical or nuclear energy into electric energy.
Greenhouse Gas (GHG)	Gases that contribute to the capture of heat in the Earth's atmosphere. Carbon dioxide is the most prominent GHG, in addition to natural sources it is released into the Earth's atmosphere as a result of the burning of fossil fuels such as coal, oil or natural gas. Widely acknowledged as contributing to climate change.



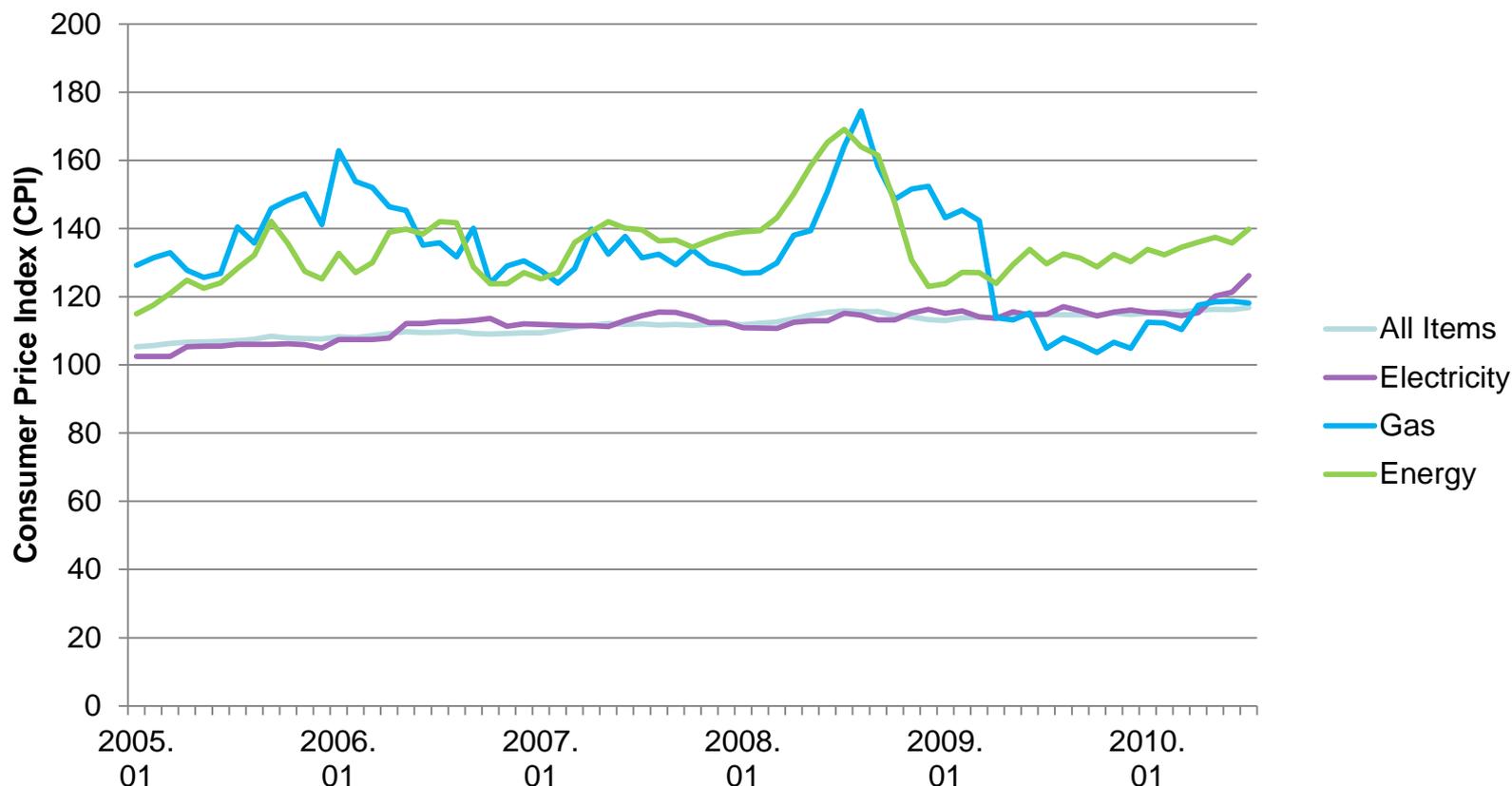


Glossary of Terms

Grid	A network of electric power lines and connections.
Installed Capacity	The capacity measured at the output terminals of all the generating units in a station, without deducting station service requirements.
Joule:	The international unit of energy. The energy produced by a power of one watt flowing for one second. The joule is a very small unit: there are 3.6 million joules in a kilowatt hour.
Load:	The total amount of electricity required to meet customer demand at any moment. The load equation fluctuates depending on electricity use throughout any given day.
Peaking Capacity:	Generating capacity typically used only to meet the peak demand (highest demand) for electricity during the day; typically provided by hydro, coal or natural gas generators.
Peak Demand:	The maximum power demand registered by a customer or a group of customers or a system in a stated period of time. The value may be the maximum instantaneous load or more, usually the average load over a designated interval of time, such as one hour, and is normally stated in kilowatt or megawatts.
Power Demand:	The maximum power demand registered by a customer or a group of customers or a system in a stated period of time. The value may be the maximum instantaneous load or more, usually the average load over a designated interval of time, such as one hour, and is normally stated in kilowatts or megawatts.
Power:	The rate of doing work. Electric power is measured in watts.
Power System:	The interconnected facilities of an electrical utility. A power system includes the generation, transmission, distribution, transformation, and protective components necessary to provide service.
Regulated Price Plan (RPP):	Rates (adjusted every six months) to ensure electricity pricing reflect the true cost of generating electricity. They provide stable and predictable electricity prices for consumers.
Transmission:	The process of transporting electric energy in bulk on high voltage lines from the generating facility to the local distribution company for delivery to retail customers.
Voltage:	The electrical force or potential that causes a current to flow in a circuit (just as pressure causes water to flow in a pipe). Voltage is measured in volts (V) or kilovolts (kV). 1 kV = 1000 V.
Load or Demand Management:	Measures undertaken to control the level of energy usage at a given time, by increasing or decreasing consumption or shifting consumption to some other time period.
Watt:	The scientific unit of electric power; a rate of doing work at the rate of one joule per second. A typical light bulb is rated 25, 40, 60 or 100 watts. A horse power is 746 watts.



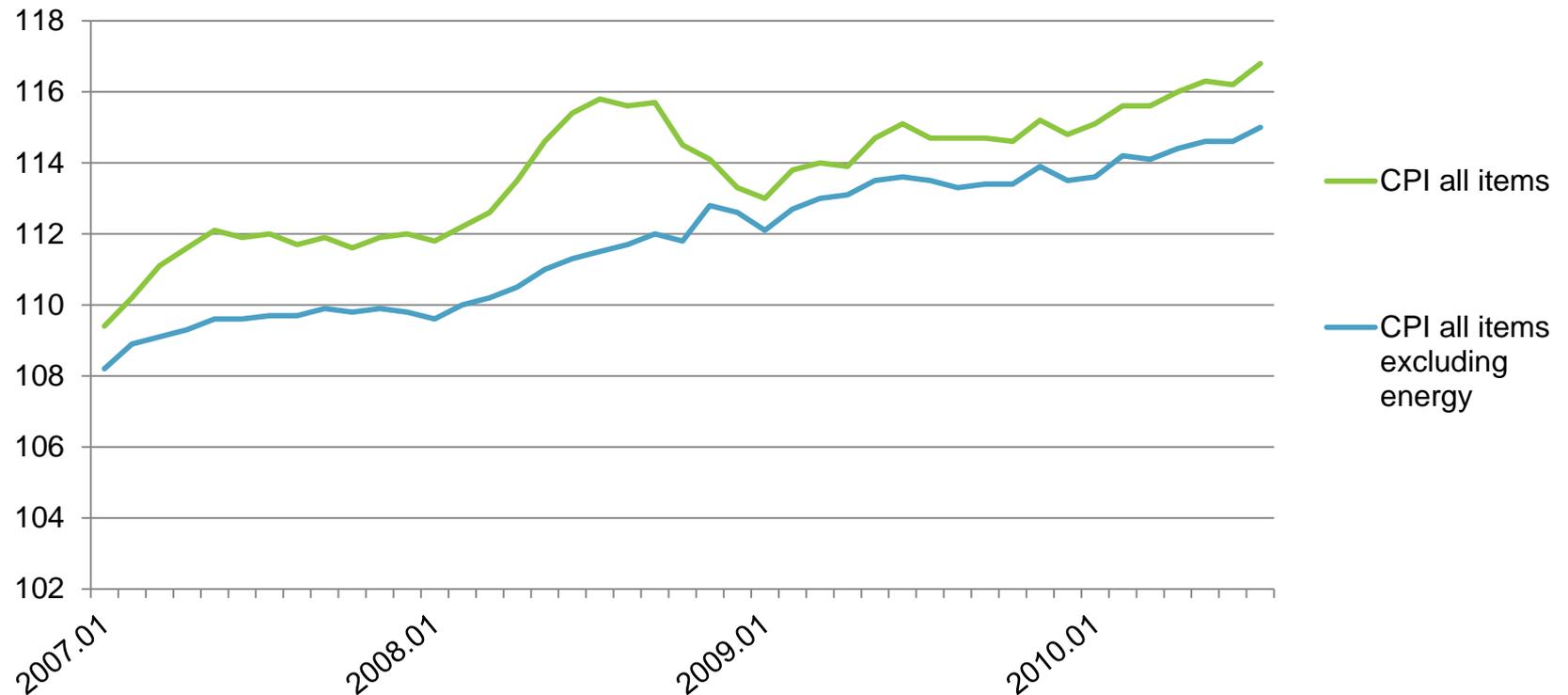
Consumer Price Index, 2005-2010



Note: *Energy* - The special aggregate "energy" includes: electricity, natural gas, fuel oil, gasoline and fuel, parts and supplies for recreational vehicles.



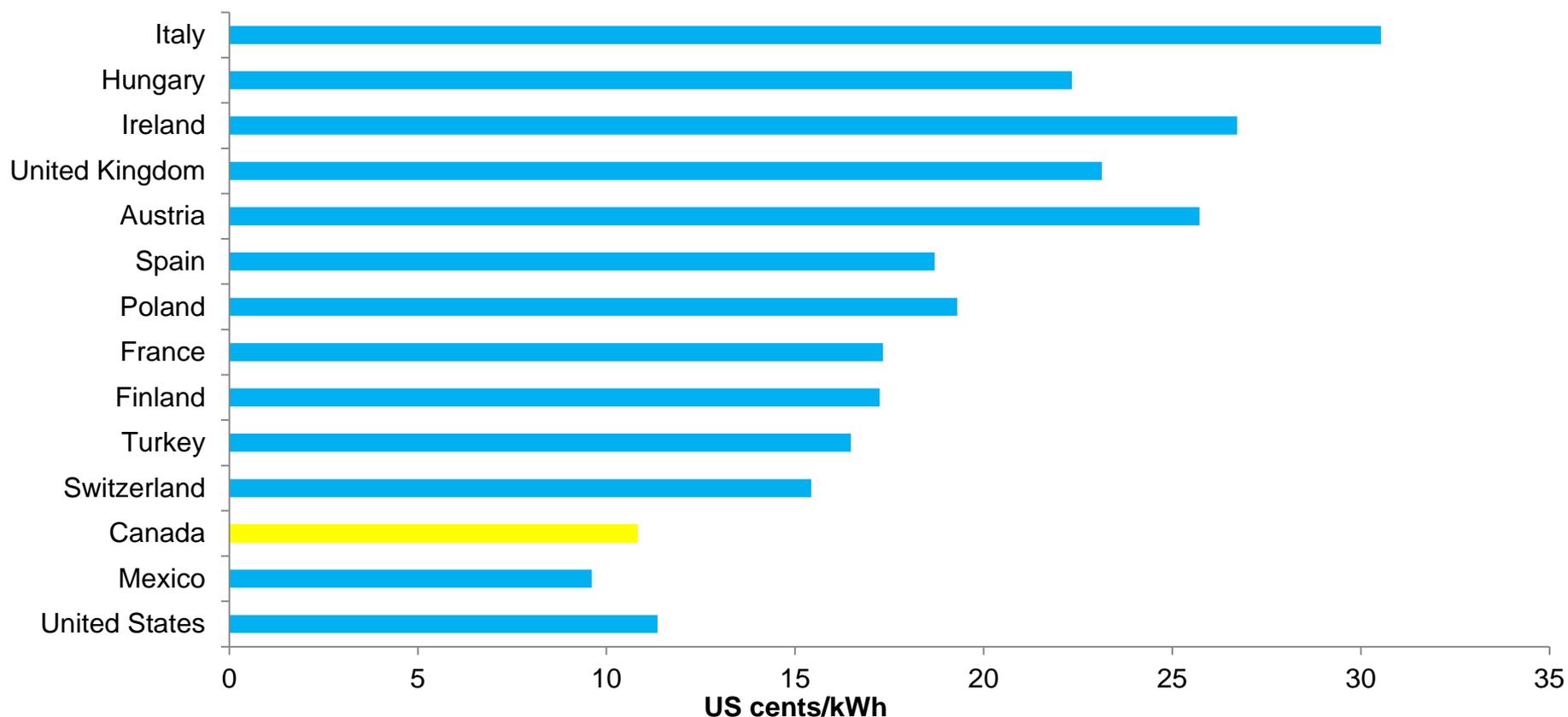
The Consumer Price Index (CPI) Comparison : Energy's Impact on the Economy



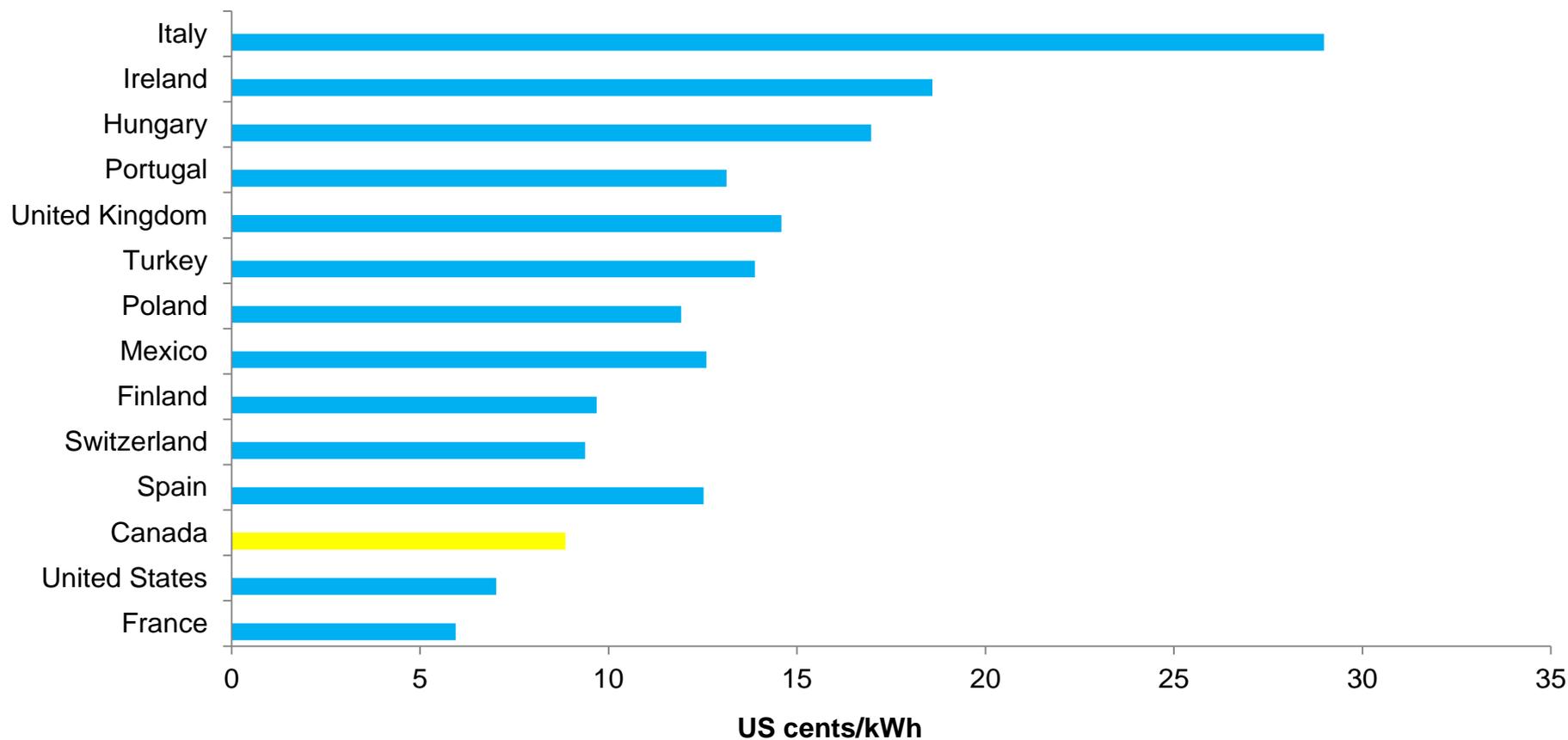
Note: A consumer price index (CPI) measures changes in the price level of consumer goods and services purchased by households. The CPI is a measure of the average change over time in the prices paid by urban consumers for a market basket of consumer goods and services.



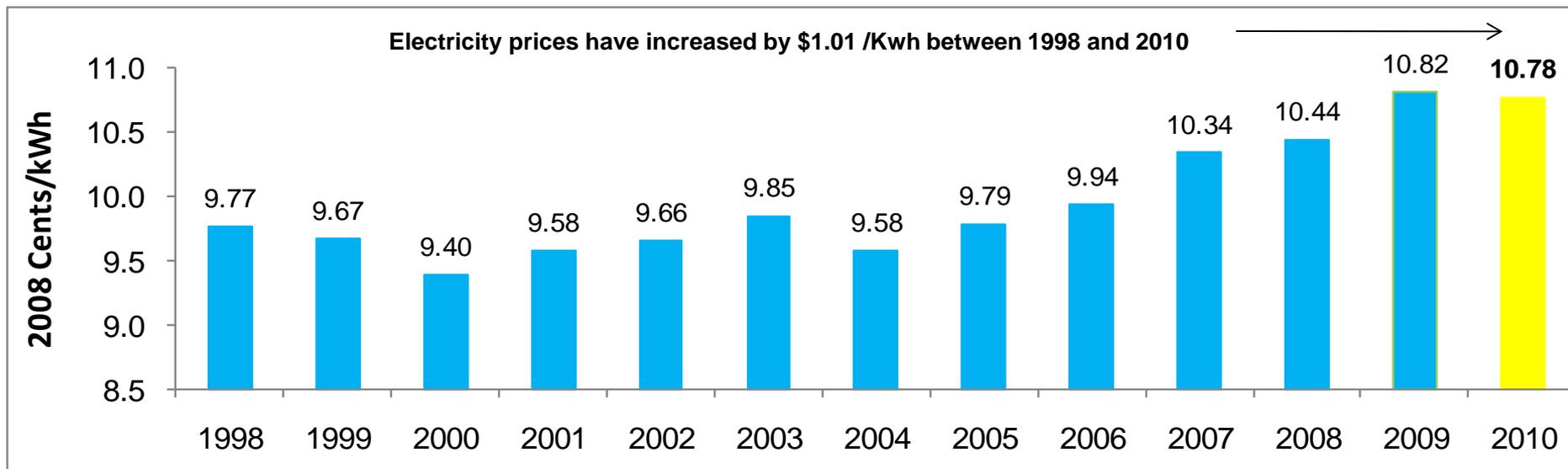
Selected World Residential Electricity Prices, 2009



Selected World Industrial Electricity Prices, 2009



Estimated Average Residential Electricity Price in Canada, 1998 – 2010 (2008 cents/kWh)



Source: Hydro Quebec, *Comparison of Electricity Prices in Major North American Cities*, 1998 – 2010.

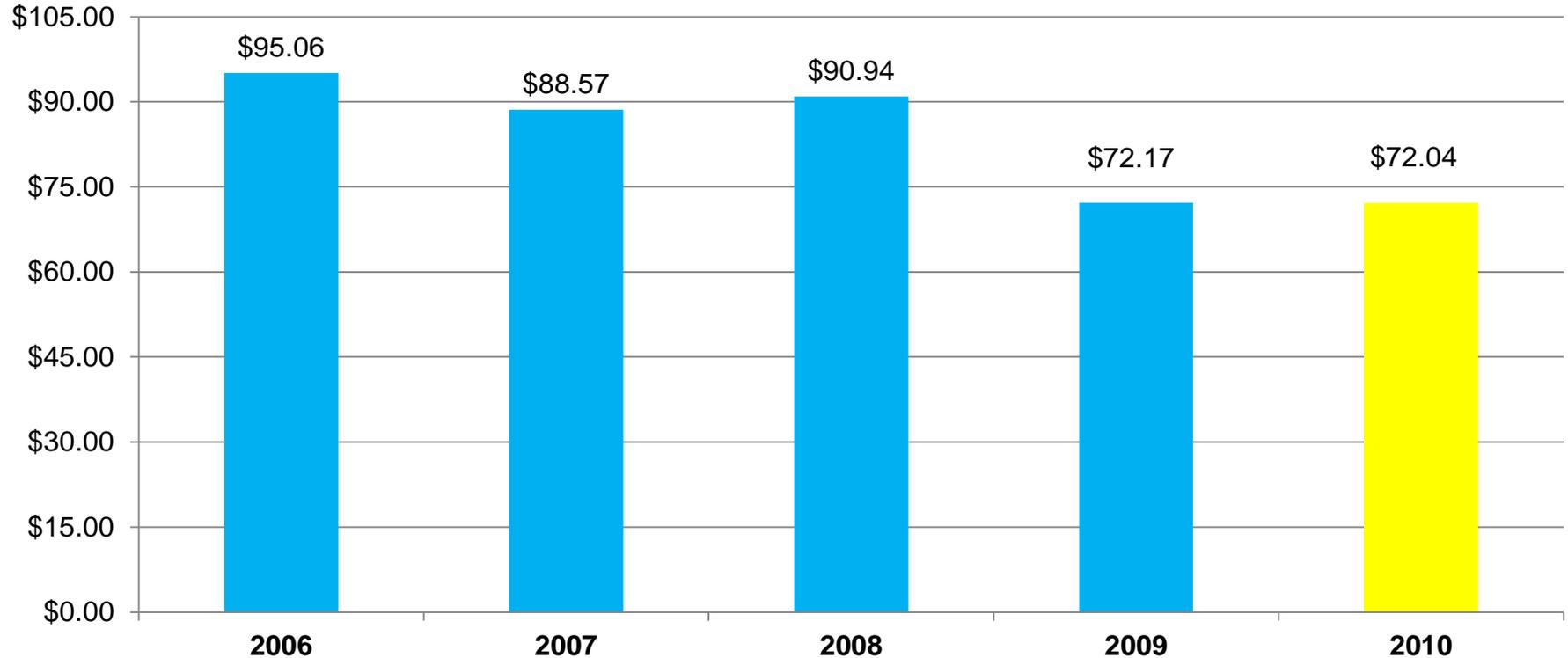
Notes: Based on 1,000 kWh monthly consumption

Average electricity price is an average of 11 major Canadian cities and may not represent an exact national average.

Prices have been adjusted from current cents/kWh to 2008 cents/kWh



Average Residential Electricity Bill in Canada (2006 – 2010)



Source: Hydro Quebec, *Comparison of Electricity Prices in Major North American Cities*, 1998 – 2009.

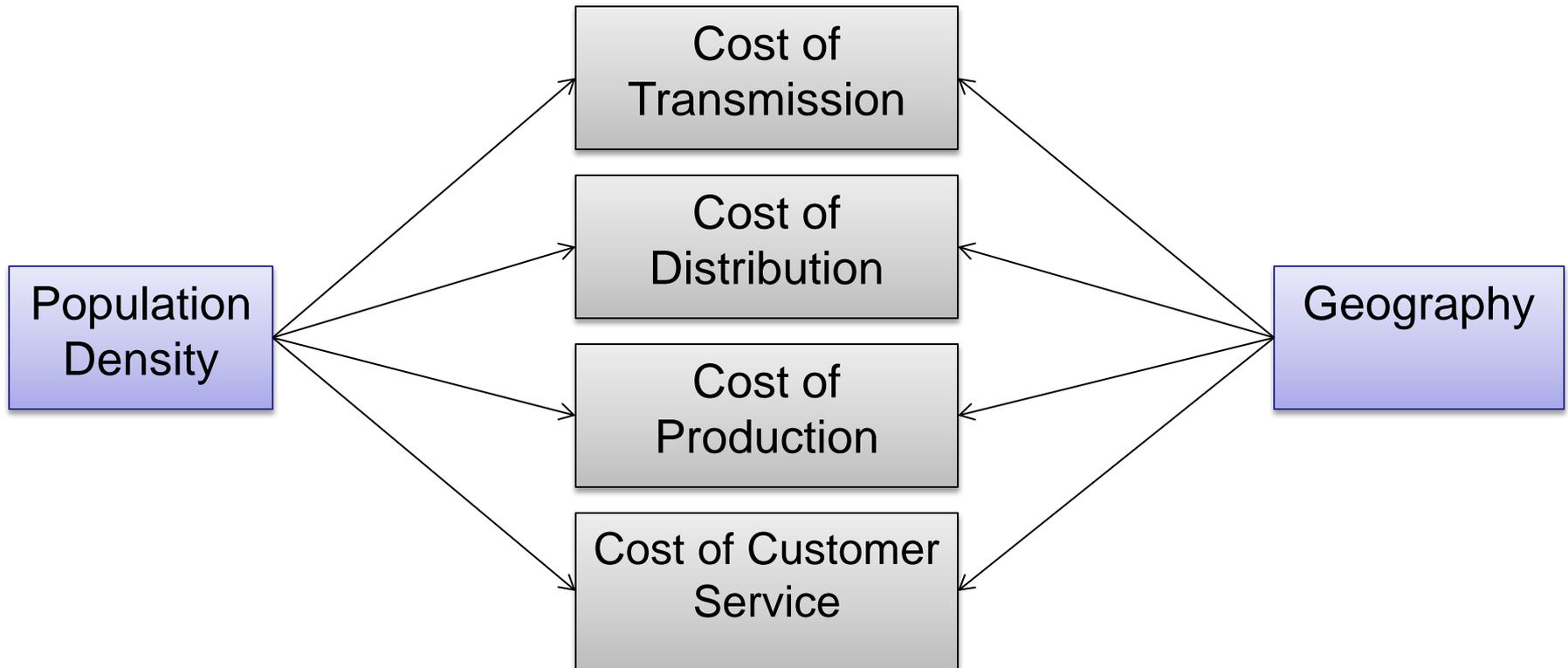
Notes: Based on 1,000 kWh monthly consumption

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Prices have been adjusted from current cents/kWh to 2008 cents/kWh



The Driving Factors of Electricity Pricing



The Cost of Electricity Across the Country

Electricity Price Regulation

- Provincial authorities regulate consumer electricity prices, generation, transmission and distribution. In the provinces with municipal utilities (Ontario and Alberta), the distribution portion of the rates paid by consumers are set after receiving municipal approval.

The Variability of Electricity Prices across the country

- Prices are generally set by the provinces and territories so prices will vary. The biggest factors contributing to pricing differences are generation availability (i.e. bioenergy, fossil fuels, geothermal, hydropower, solar and wind) and the cost to deliver electricity to consumers.



The Components of Electricity Pricing

Electricity Supply

- **Generation:** The provincial cost of electricity is primarily dependent on the volume, fuel type and whether prices are market-based or regulated. These include water rental fees and energy purchases
- **Distribution:** Distribution costs are accumulated from the transmission of electricity over local, low-voltage power lines to residential and other consumers. Distribution costs are regulated by municipal, provincial or territorial regulatory boards.
- **Transmission:** Costs incurred to transmit electricity on the high-voltage transmission system, from the point of generation or purchase, to the electricity delivery point or the low-voltage distribution system
- **O&M:** The ongoing operational and maintenance costs associated with up keeping the reliability of Canada's electricity system. The cost of infrastructure investment and the use of renewable energy sources to produce electricity.

Landscape

- **Geography and Population Density:** Our natural resources vary by province and influence the type of fuel source available to the Canadian population. The cost of electricity varies between provinces and territories, due to the differences in these fuel sources.



The Driving Factors Behind our Electricity Pricing Structure

Taxes

- The provincial and federal taxes applicable to the provinces (i.e. GST, HST, provincial sales tax etc.) influence the electricity customer rates.

Operating Costs

Financial Costs

- **Cost of Capital:** the cost of a company's funds (both **debt** and **equity**). Firms need to acquire capital from others to operate and grow. A company's assets are financed by either debt or equity.
- **Cost of Capital for Replacement, Supply and System Improvements:** The costs associated with upholding the electricity system. A portion of the customer electricity rate charge is attributed to the cost of providing service and does not depend on the direct cost of energy consumption.
- **Cost of Meeting Regulatory Requirements :** The vast majority of electricity in Canada is generated by public utilities whose rates are subject to government regulation. Our federal government has targets to reduce Canada's greenhouse gas emissions substantially in the coming years. The electricity industry has invested in clean, renewable electricity generation, which accounts towards the current cost of electricity prices.
- **Cost of Energy Efficiency:** In some cases, a portion of the customer electricity rate charge is used to fund electricity efficiency programs. These dollars help to meet future energy needs in an environmentally responsible way (i.e. there is a charge on the Nova Scotia Power bill for energy efficiency. Those funds are then passed on to Efficiency Nova Scotia for the delivery of energy efficiency programs).



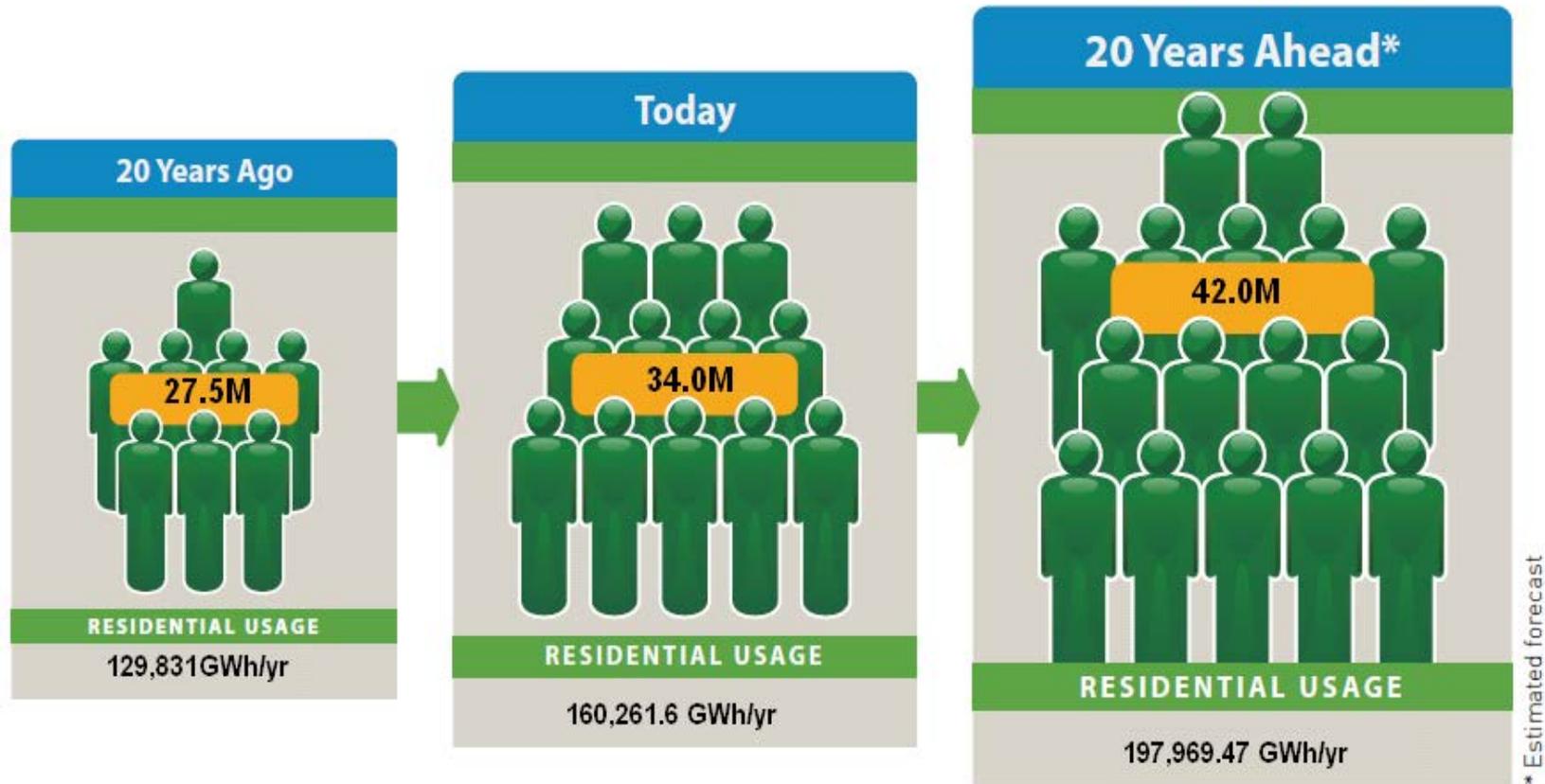


The Driving Forces Behind Increasing Electricity Rates

Canada's electricity system is on the verge of an important transformation. A growing population, economic recovery and growth, and evolving expectations of how Canadians want their energy needs met will necessitate fundamental changes to our electricity system. While significant investment is required and will not come without a cost to the customer, the benefits to investing in reliable, affordable and sustainable electricity far outweigh the costs. Investing in electricity infrastructure will ensure a stable supply of electricity to support Canada's economic and demographic growth. Growing our electricity supply responsibly, and investing in lower-emitting electricity technologies, will mean a reduction in the sector's environmental footprint as well as economic and social benefits to our communities.



Canada's Future Residential Electricity Needs



Canadian Provincial Electric Utility Tribunals

Alberta	Alberta Utilities Commission
British Columbia	British Columbia Utilities Commission
Manitoba	Manitoba Public Utilities Board
New Brunswick	New Brunswick Energy and Utilities Board
Newfoundland and Labrador	Newfoundland & Labrador Board of Commissioners of Public Utilities
Northwest Territories	Northwest Territories Public Utilities Board
Nova Scotia	Nova Scotia Utility and Review Board
Ontario	Ontario Energy Board
Prince Edward Island	PEI- Island Regulatory and Appeals Commission
Quebec	Régie de l'énergie du Québec
Saskatchewan	Saskatchewan Rate Review Panel
Yukon	Yukon Utilities Board

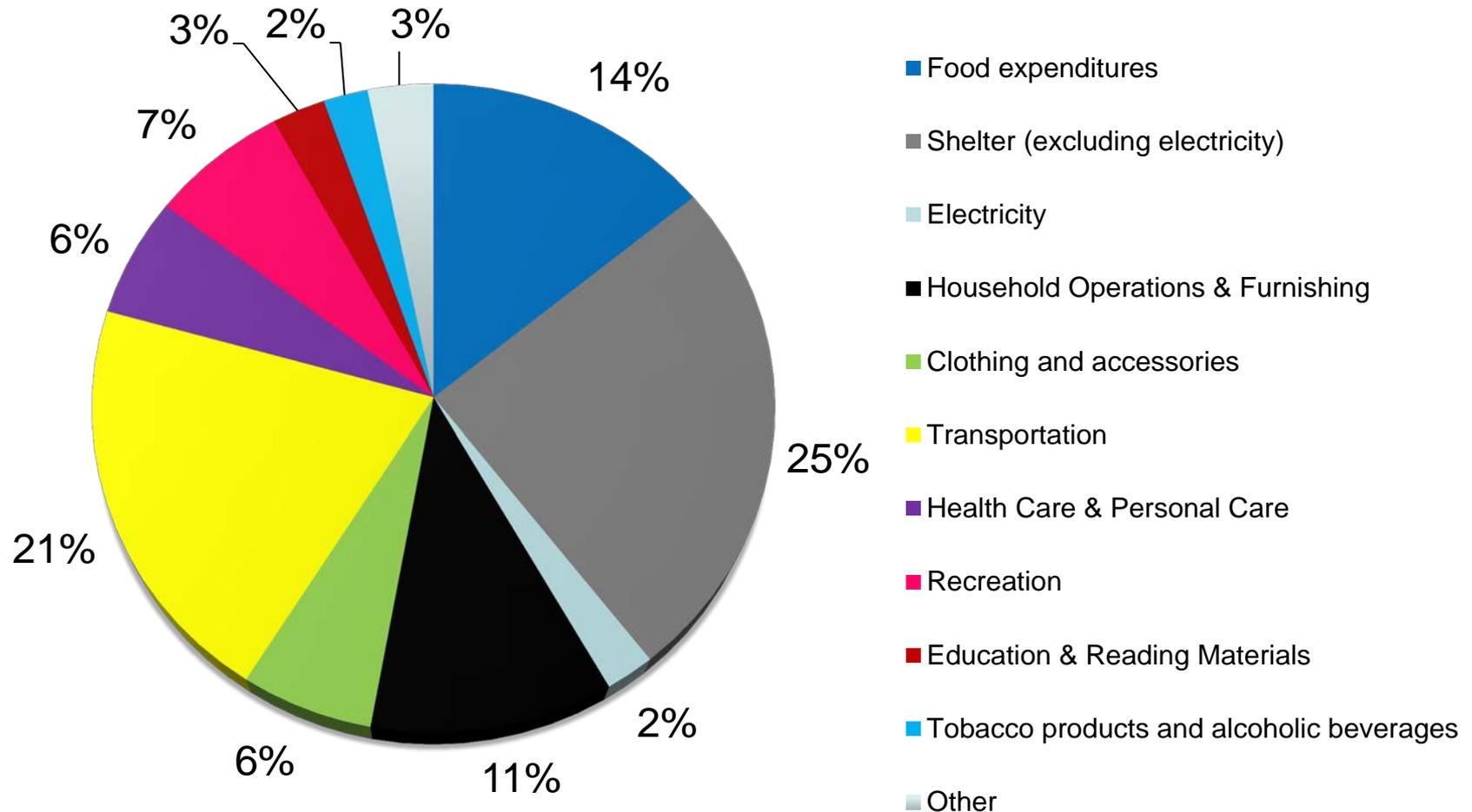




Canadian Provincial Electricity Structure

Alberta	The Alberta Utilities Commission (AUC) regulates the utilities sector, natural gas and electricity markets to protect social, economic and environmental interests of Alberta where competitive market forces do not.
British Columbia	The BC Utilities Commission (BCUC) primary responsibility is the regulation of British Columbia's natural gas and electricity utilities.
Manitoba	Manitoba Hydro is the only entity that can retail power in Manitoba. Retail electricity rates are regulated by the Manitoba Public Utilities Board.
New Brunswick	Almost all the residential and industrial power consumers in the province are serviced by New Brunswick (NB) Power, a crown corporation that functions as a regulated monopoly. The New Brunswick System Operator (NBSO) ensures the reliability of the electric system and facilitate the development and operation of a competitive market in the province
Newfoundland and Labrador	Newfoundland and Labrador Hydro ("NL Hydro"), a Crown corporation, owns and operates most of the generation and transmission facilities in this province. Newfoundland Power Inc., a Fortis company, owns and operates some transmission and generation, and distributes energy to most residential and commercial customers in the province. The Newfoundland and Labrador Board of Commissioners of Public Utilities regulates the electrical utilities.
Nova Scotia	The Nova Scotia Power System Operator (NSPSO) is responsible for the administration of the NS Market Rules and the Nova Scotia open access transmission tariffs (OATT).
Ontario	In Ontario, electricity prices are set by the Ontario Energy Board through the regulated price plan.
Prince Edward Island	Most of PEI's electricity is imported from New Brunswick. Approximately 90% of PEI's customers are serviced by the fully integrated, regulated, and privately owned Maritime Electric (Maritime) which is a wholly owned subsidiary of Fortis. The remainder of electricity customers are serviced by the municipally owned utility Summerside Electric. Both Maritime and Summerside Electric are regulated by the all purpose PEI Regulatory and Appeals Commission.
Quebec	Transmission and distribution are regulated by the Regie de l'energie, the sector regulator.
Saskatchewan	SaskPower, a provincial crown corporation, is the owner of <i>Saskatchewan's</i> generation, transmission and distribution facilities. SaskPower implemented an Open Access Transmission Tariff (" OATT ") in 2001, which opened the Province's electricity system to wholesale access

Canada : 2011 Surveyed Household Expenditures*



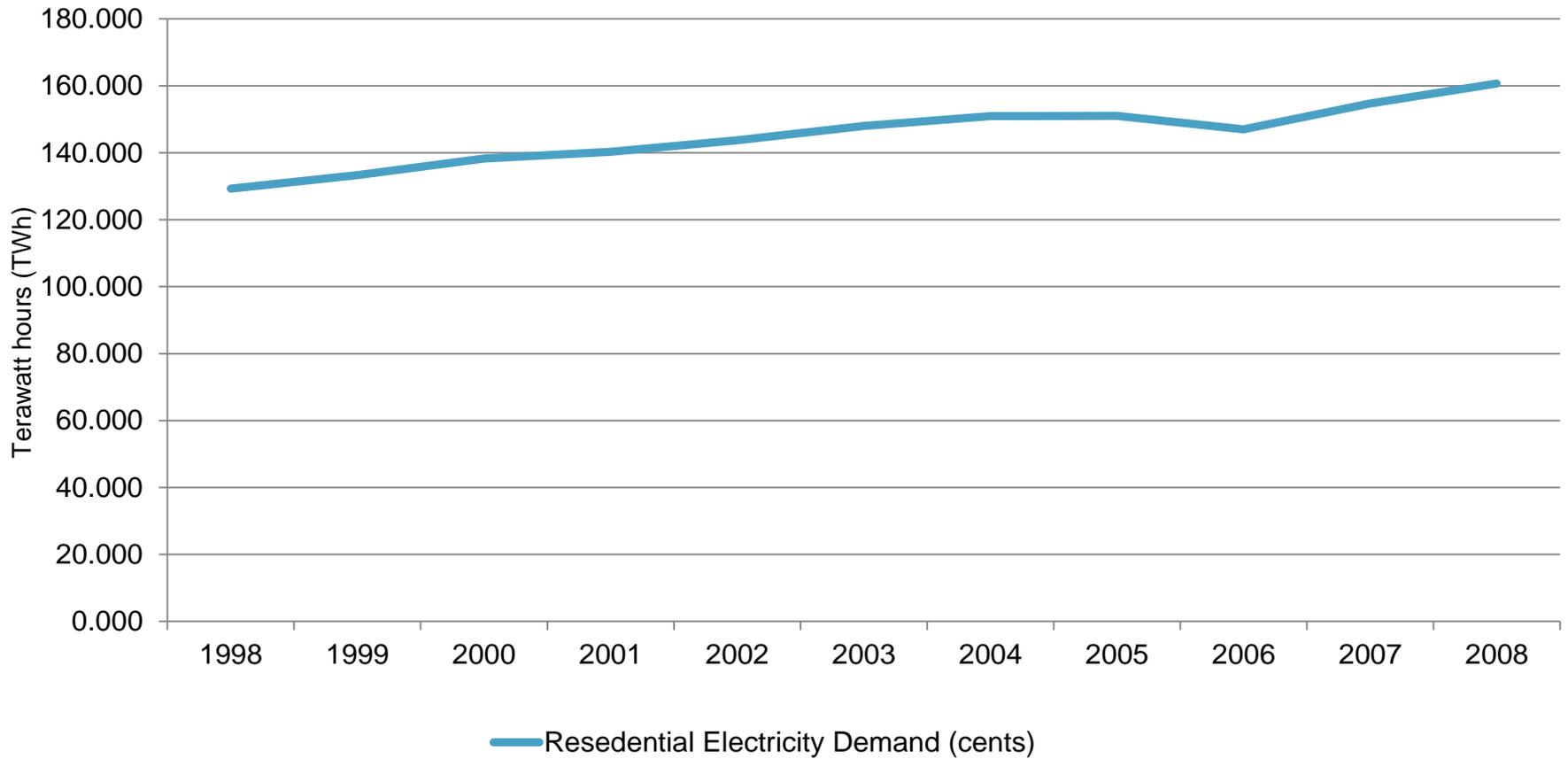
Statistics Canada, CANSIM 203-0021, Survey of household spending , retrieved April 10, 2013

*Total current consumption excluding income taxes, personal insurance payments and pension contributions, gifts of money, alimony and contribution to charity

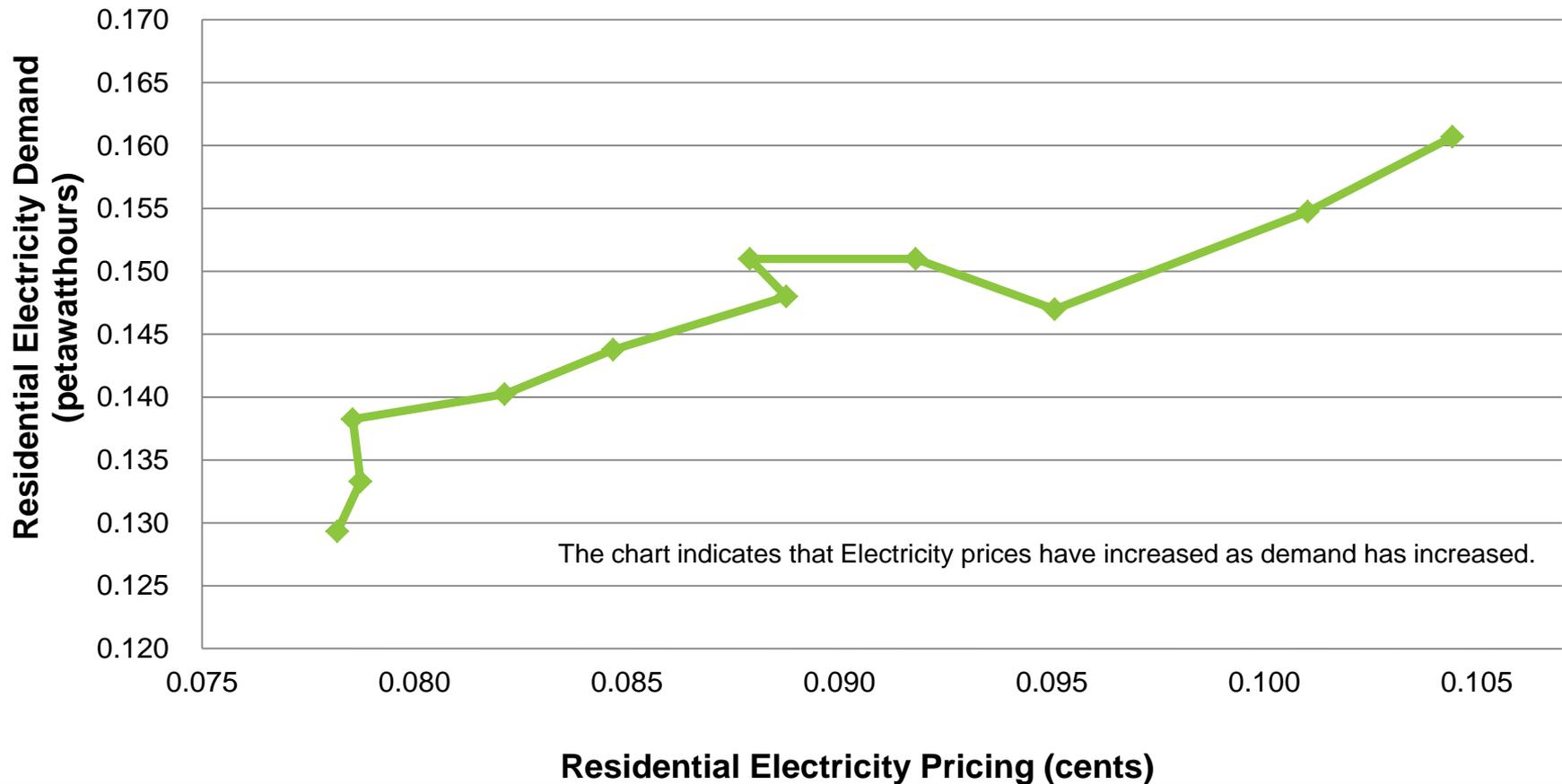




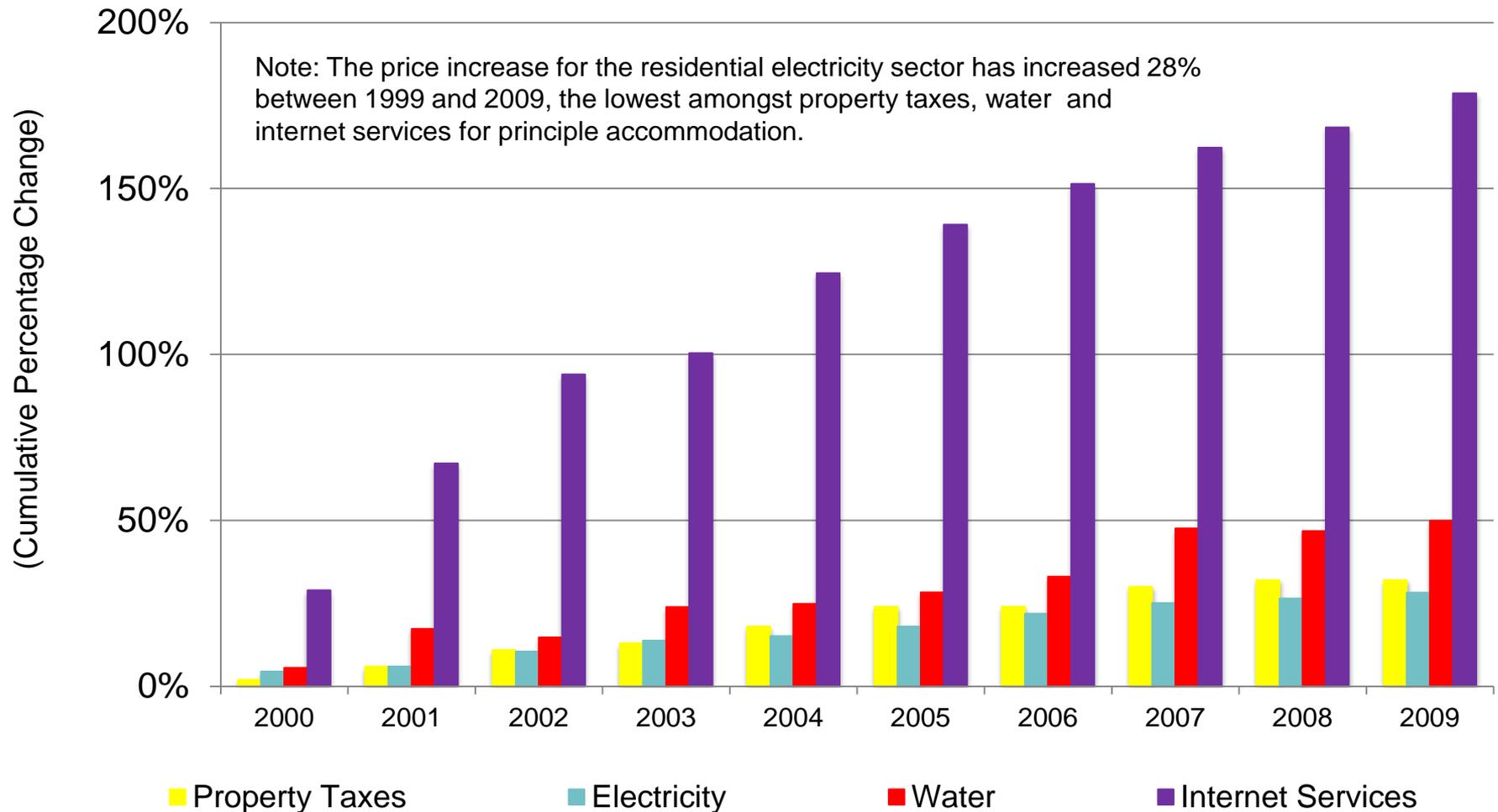
Canadian Residential Electricity Demand (1998-2008)



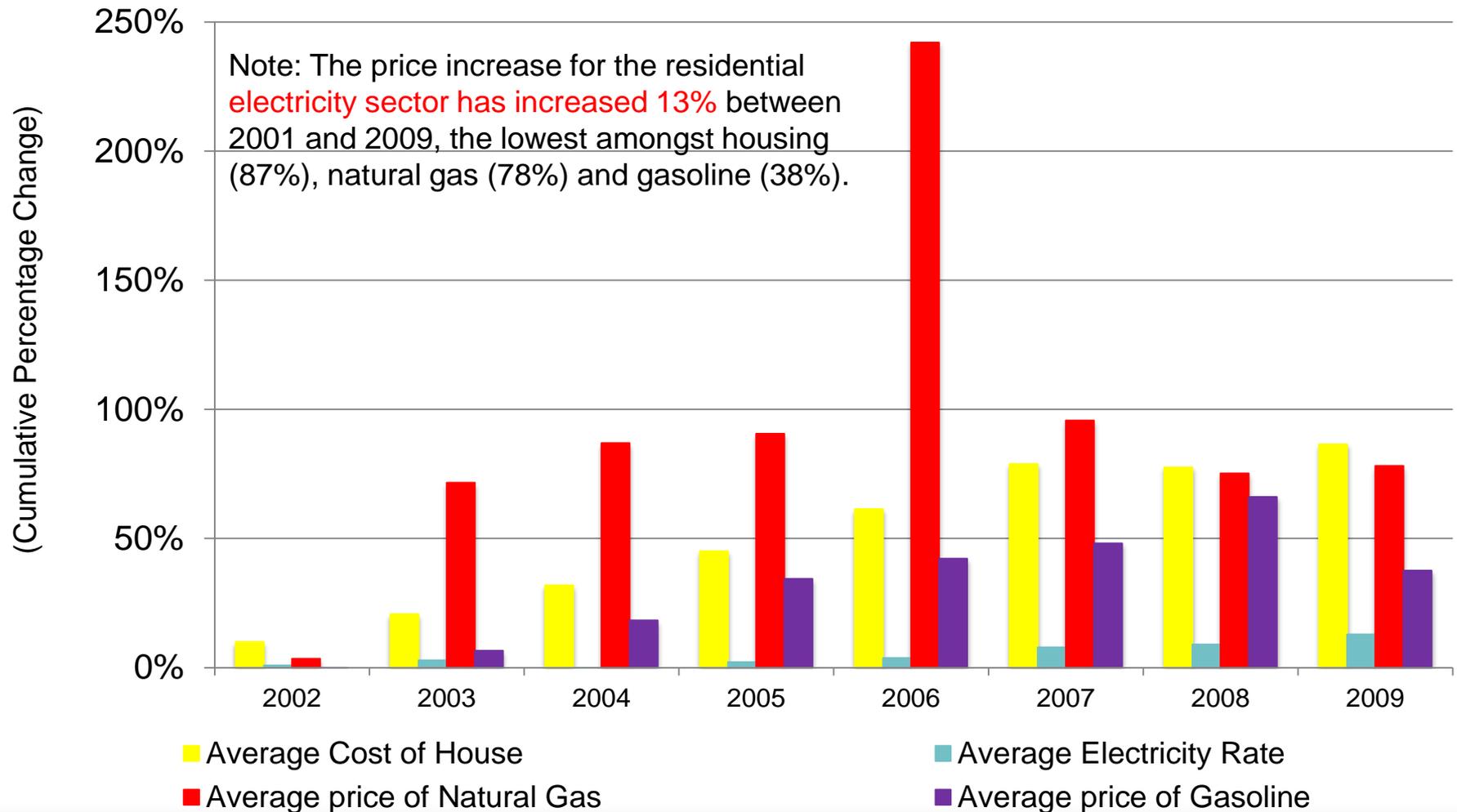
Canadian Residential Electricity Pricing vs. Electricity Demand (1998-2008)



The Percentage Change in Household Expenditures 2000-2009



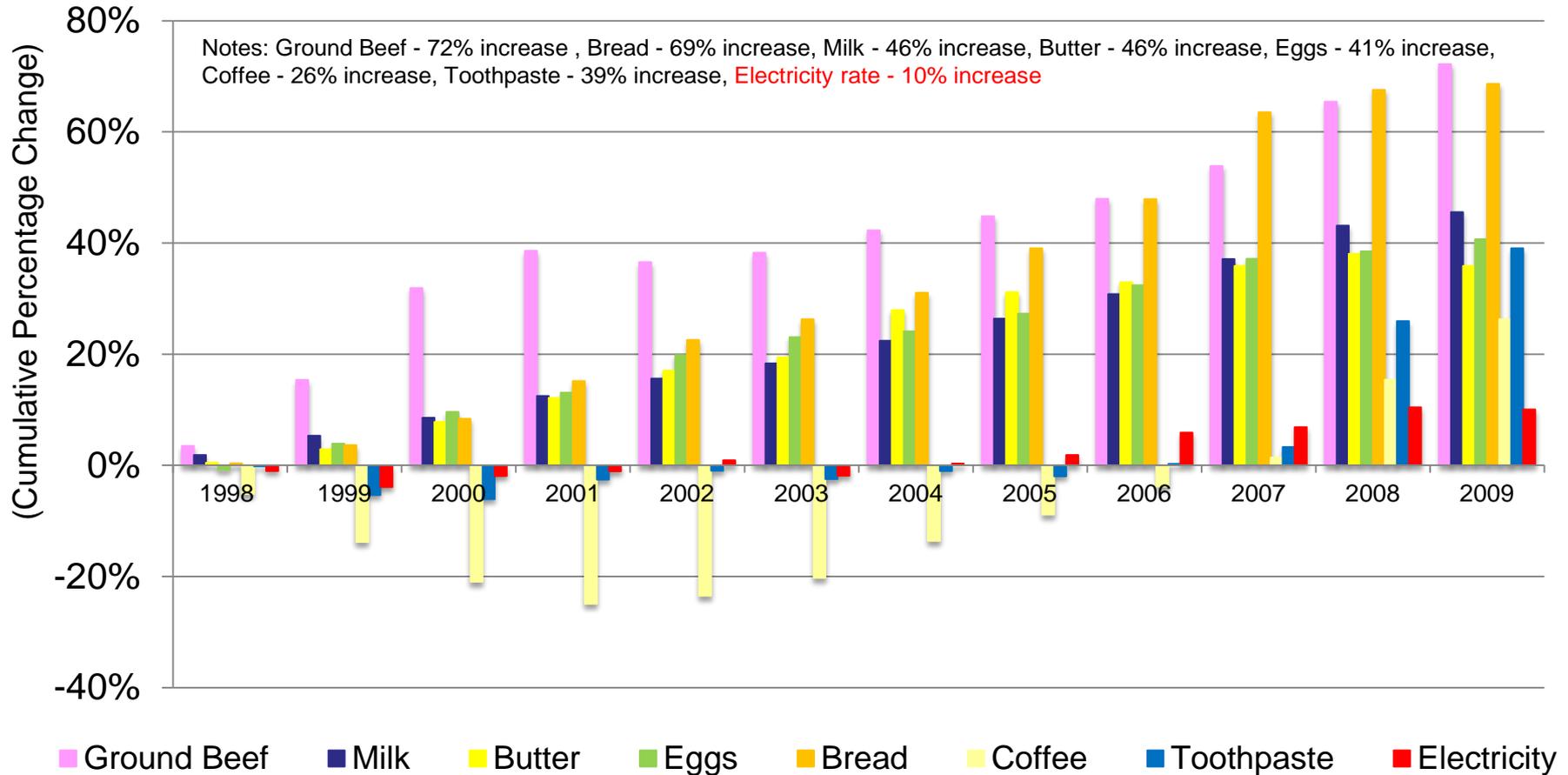
The Percentage Change in Household Expenditures 2002-2009



Note: The change refers to a unit of electricity (kwh), a unit of natural gas and a litre of gasoline.

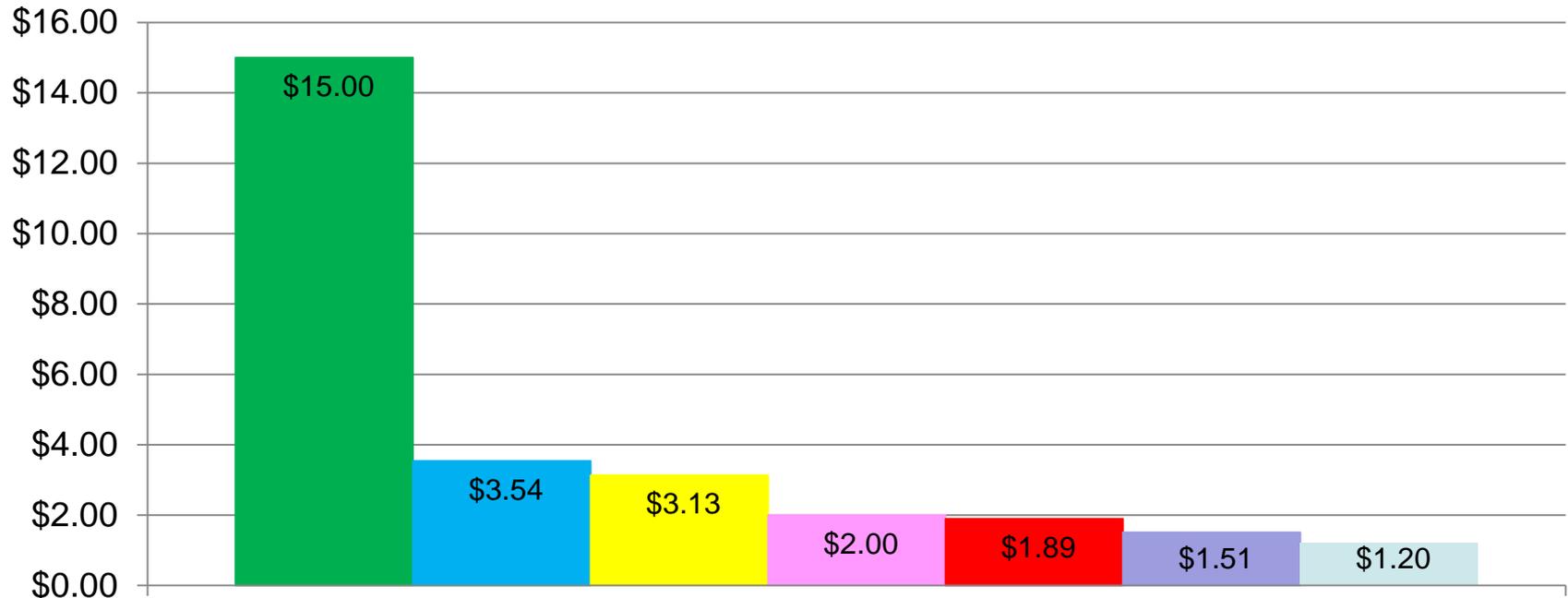


Cumulative Percentage Change in Household Items Price Per Unit 1998-2010



Notes: Units as followed: **Ground Beef** - 1kg, **Partly Skimmed Milk** - 1Litre, **Butter** -454 grams, **Eggs** - 1 Dozen, **Bread** - 675 grams, **Roasted Coffee** - 300 grams, **Toothpaste** - 100 millilitres, **Electricity** - 1 Kwh (kilowatt-hour)

Ottawa Daily Spend Snapshot – Electricity Pricing Comparison 2011



- Parking Rate (Downtown Ottawa)
- OC Transpo Bus Fare
- Newspaper - The Globe and Mail
- Rogers Cable

- Daily Electricity Rate (Ottawa Area)
- Starbucks Medium Coffee
- Tim Hortons Medium Coffee

Note: Tim Hortin's medium coffee (including tax), OC Transpo Bus Fare (to and from work), Newspaper (Globe and Mail from news stand- including tax), Cost of Electricity (Hydro Ottawa – OEB calculator using tiered pricing and 760 Kwh per month)





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In Ottawa,
power all this
and more for
only \$3.54
per day!



Percentage Change Slides – Definitions and Explanations

Percentage Change in Household Expenditures (Slides 1, 2 and 3)

- The percentage change amongst the various household expenditures were based on a 1999 baseline. The slides explain the changes in household variables from year to year based on an average expenditure Statistics Canada survey.

Percentage Change in Household Items per Unit (Slide 4)

- The percentage change amongst the various household items per unit is based on a 1997 baseline. The slide describes the change in the average cost on a per unit basis.



Canadian Electricity Pricing - Summary

- Electricity makes up about 3 per cent of the average household expenditure in Canada. Yet our economy and our lifestyles are increasingly dependent on the reliable provision of electricity. While there are upward pressures on electricity prices as new infrastructure is built, the average cost of electricity has increased at a much slower rate than for other services such as telecom, cable, property taxes and water bills.
- There is upward pressure on electricity prices across Canada as electricity companies begin to make necessary investments in new infrastructure — to ensure our power system remains highly reliable and becomes even cleaner.

