



# **Alberta Retail Markets for Electricity and Natural Gas**

A description of basic structural features

July 17, 2014



## PREFACE

In this paper we take a snapshot of the basic structural features of the Alberta retail markets for electricity and natural gas. Our focus is on characteristics relevant to an analysis of the *state of competition*. Some of the features originate in legislation or market design, but all are important in understanding interactions within the market.

We draw on the Retail Market Review Committee's 2012 *Power to the People* report and the MSA's internal market monitoring experience. No conclusions are drawn about the competitiveness of the markets.

The Market Surveillance Administrator is an independent enforcement agency that protects and promotes the fair, efficient and openly competitive operation of Alberta's wholesale electricity markets and its retail electricity and natural gas markets. The MSA also works to ensure that market participants comply with the Alberta Reliability Standards and the Independent System Operator's rules.



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# 1. Production chains

## 1.1 Electricity

In a conventional product market, the physical product changes hands as it moves downstream through the vertical supply chain from producers through intermediaries and finally to end consumers. Payment for the product flows upstream. Electricity is different: it flows from generators to consumers through the electrical grid and retailers do not take physical possession of it at any point. As such it is helpful to think of retailers as providers of financial arrangements. Retailers add value through the provision of contract offerings, customer care, and billing services. Different classes of consumers are offered a variety of purchasing options in the retail market for electricity. The physical and financial flows are illustrated in Figures 1.1 and 1.2, respectively.

The retail market is divided into two segments: large consumers with consumption greater than 250 megawatt hours (MWh) per year and small consumers who use less than 250 MWh per year.<sup>1</sup> For the purpose of this report the small segment consists of three rate classes: residential, farms and irrigation, and small commercial. Small consumers have two options for obtaining electricity:

1. From a competitive retailer offering unregulated rates via contracts; or
2. From a regulated retailer (default supplier) providing a rate known as the Regulated Rate Option (RRO).

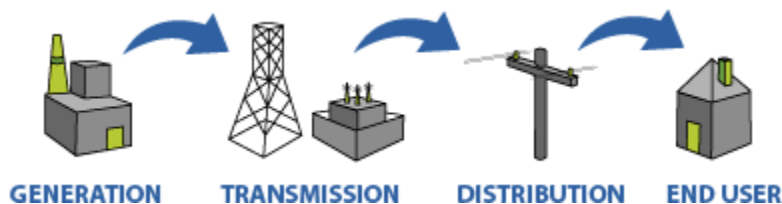
A customer pays a rate for energy to an RRO provider that is approved by the Alberta Utilities Commission (AUC) unless it enters into a competitive contract.

The large consumer segment (described herein as ‘large industrial’) has three options:

1. From a competitive retailer offering unregulated rates via contracts;
2. From a distribution system owner assigned as the customer’s default supplier; or
3. From itself by establishing a ‘self-retail’ operation to purchase directly from the wholesale market.

Notably, there is no regulated rate available for large consumers. Instead, there exist default rates provided by default suppliers that offer various pricing arrangements; this price is normally based on the ex post flow through of incurred energy costs.

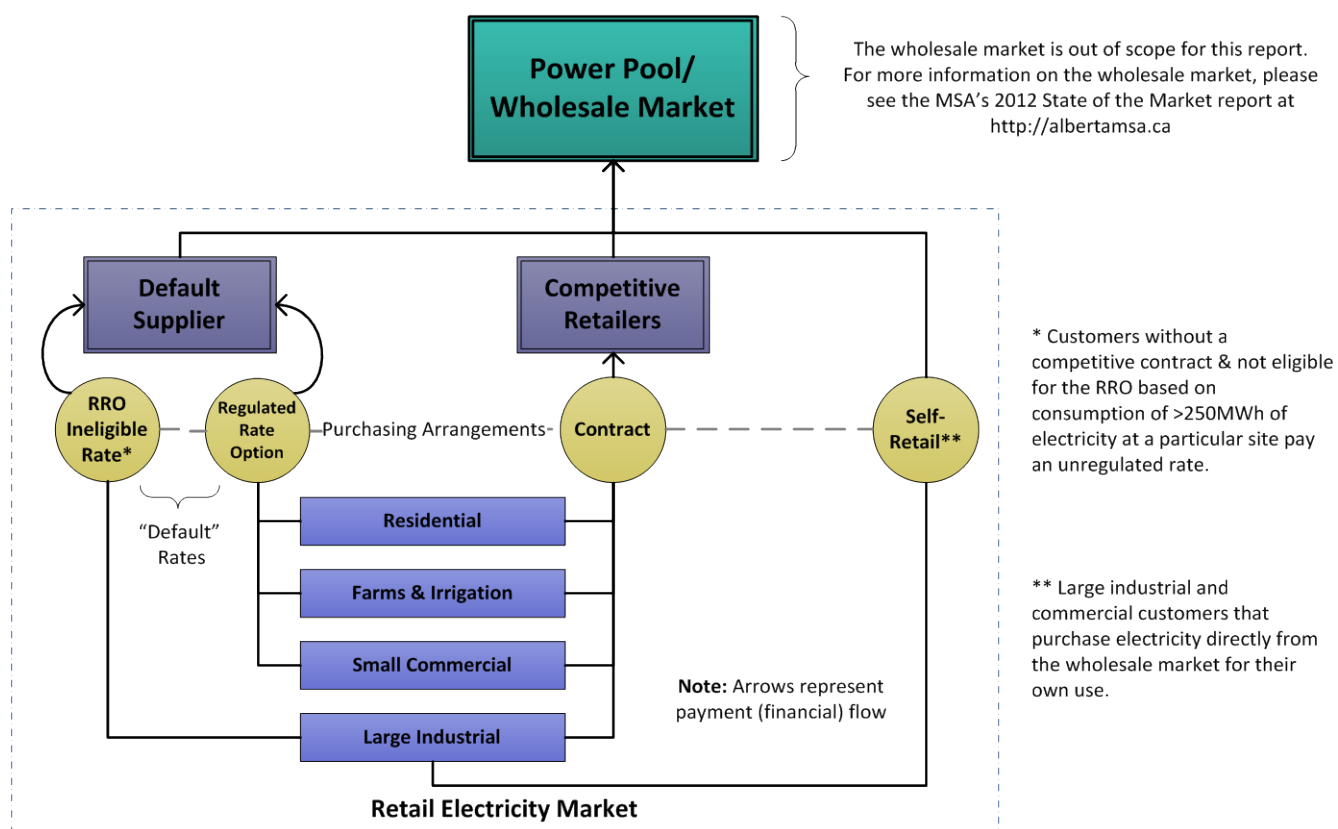
**Figure 1.1: Retail electricity market product flow<sup>2</sup>**



<sup>1</sup> This level of consumption is significant for at least two reasons. First, consumers whose annual electricity consumption at a site is reasonably forecast to be less than 250 MWh are eligible to purchase electricity from the regulated retailer as discussed in-text; see Section 1(d)(ii) of the *Regulated Rate Option Regulation* (made under the *Electric Utilities Act*). Second, consumers who contract to purchase less than 250 MWh of electricity annually are marketed to differently than other consumers; see Section 1(1)(b) the *Energy Marketing and Residential Sub-metering Regulation* (made under the *Fair Trading Act*).

<sup>2</sup> UCA, “Electricity Market.”

Figure 1.2: Retail electricity market overview



## 1.2 Natural gas

The natural gas market more closely resembles a conventional product market than the electricity market. Notwithstanding, the physical product flow is relatable to the electricity example. Unlike electricity, natural gas retailers buy physical gas on behalf of consumers and arrange for its transportation. Retailers add value to the end consumer through the provision of contract offerings, customer care, and billing services. Different classes of consumers are offered a variety of purchasing options in the retail market for natural gas. The physical and financial flows are illustrated in Figures 1.3 and 1.4, respectively.

The retail natural market is not divided into two volume-based segments. Instead, there is a regulated default supplier of natural gas for all consumer classes that offers product at what is known as the Default Rate Tariff (DRT). While a large industrial consumer is defined to be one which consumes in excess of 2,500 GJ of natural gas annually, such consumers do not become ineligible for the DRT if their consumption exceeds this level.<sup>3</sup>

All classes of consumers can purchase natural gas from a competitive retailer offering unregulated rates. Large consumers are also able to purchase natural gas from the unregulated wholesale natural gas market, i.e., they are self-retailers.

<sup>3</sup> Consumers who contract to purchase less than 2,500 GJ of natural gas annually are marketed to differently than other consumers; see Section 1(1)(b) the *Energy Marketing and Residential Sub-metering Regulation*.

Figure 1.3: Retail natural gas market product flow

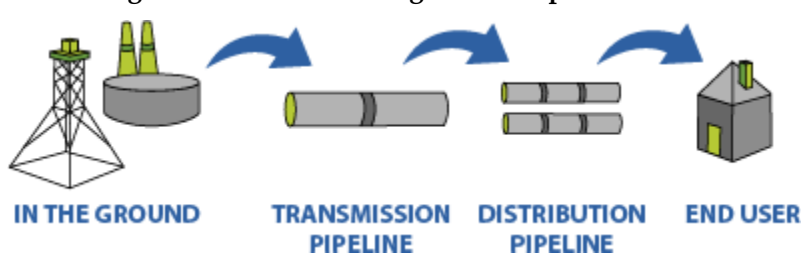
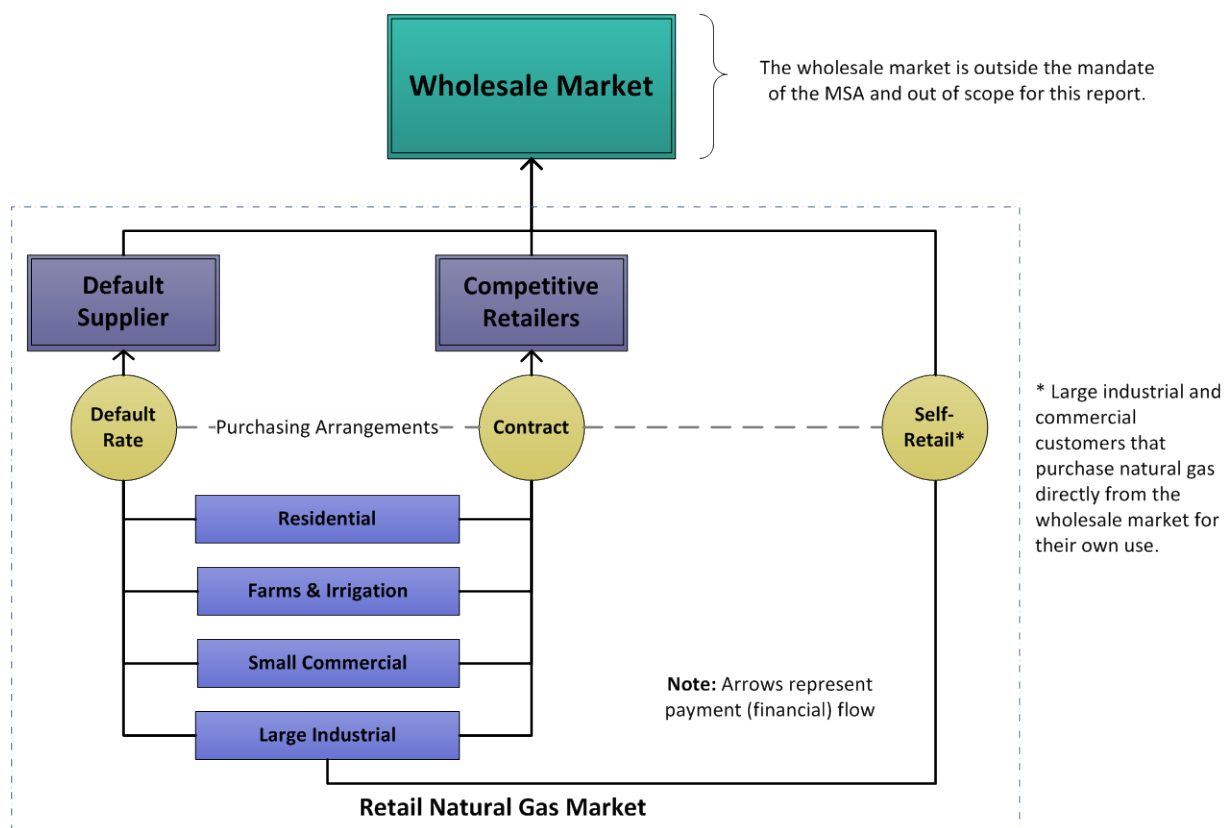


Figure 1.4: Retail natural gas market overview



## 2. Supply conditions

### 2.1 Regulated rate option for electricity

The RRO is the price paid for electricity by consumers who have not signed a contract with a competitive retailer. The term ‘regulated’ means that the rate is mandated by regulation *to exist*, not that the price itself is set by government. The RRO price depends on forward market prices as its providers buy forward contracts to hedge spot market price volatility. Consumers are eligible for the RRO if they consume less than 250 MWh of electricity in a given year; ineligible consumers can sign a contract with a retailer or pay an unregulated rate set by the relevant distributor.

The *Electric Utilities Act* and *RRO Regulation* require electric distribution system owners to provide the RRO in their respective load settlement zones (zone), i.e., service areas. These owners can choose to provide it on their own or delegate a retailer to serve consumers. The main distribution systems are illustrated in Figure 2.1. Each zone has a load settlement agent (agent) that is responsible for determining or estimating each consumer’s hourly electricity consumption in order to make purchases of electricity from the power pool.<sup>4</sup> A given agent may be responsible for multiple zones.<sup>5</sup>

Distribution system owners have delegated RRO provision to the retailer reported in Table 2.1. Table 2.1 also reports the listing of Rural Electrification Association (REA) RRO providers in the ATCO and FortisAlberta zone. REAs are co-operatives that own distribution systems in rural areas; as such, they are also required to provide a RRO or delegate this responsibility to a retailer. REAs are discussed further in Section 2.6.1.

RRO providers are required to submit a rate-setting plan known as an Energy Price-Setting Plan (EPSP) to the AUC for its approval.<sup>6</sup> Section 4(1) of the *RRO Regulation* states:

[t]he [energy price-setting plans] must, with a reasonable degree of transparency, use a fair, efficient and openly competitive acquisition process to ensure that the resulting prices for the supply of electric energy are just, reasonable and electricity market based.

Since mid-2011, EPCOR Energy, ENMAX Energy, and Direct Energy Regulated Services (DERS) have been operating under EPSPs which are set to expire in 2014.<sup>7</sup> EPCOR Energy’s EPSP is based on Natural Gas Exchange auctions in which it buys electricity to match its load forecast. DERS and ENMAX Energy buy electricity in forward markets on the recommendation of an independent advisor. They are also attempting to buy energy to match their load forecasts. Notwithstanding this difference, the three EPSPs have produced similar RRO prices as illustrated in Figure 2.2.

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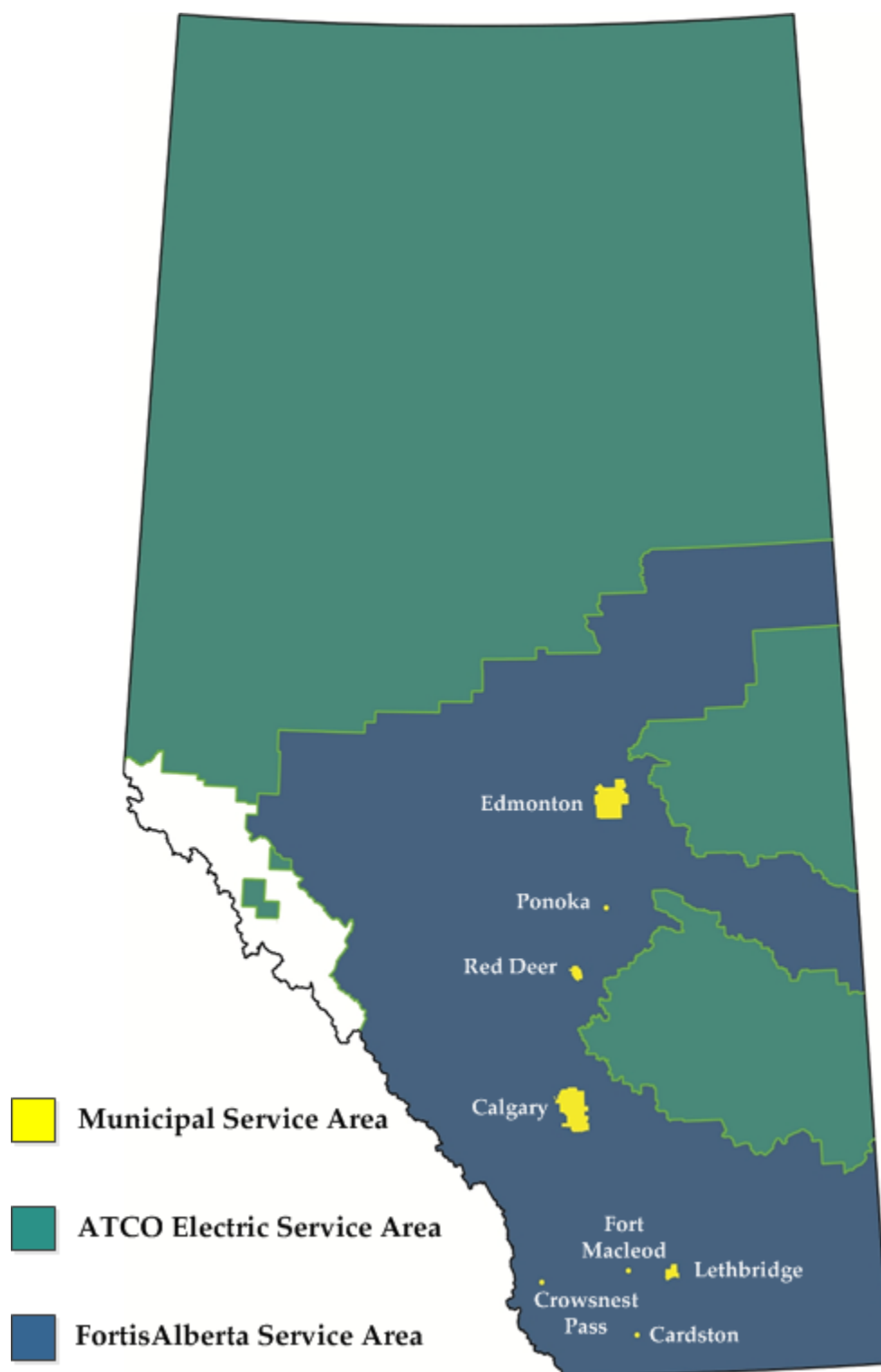
<sup>4</sup> *Electric Utilities Act*, section 1(1)(cc).

<sup>5</sup> For example, ENMAX is the agent for the zones of Calgary, Ponoka, Cardston, Crowsnest Pass, Fort Macleod, and Lethbridge.

<sup>6</sup> REAs and certain municipalities as distribution system owners use different regulatory approval mechanisms and must seek approval from their board of directors or city council respectively.

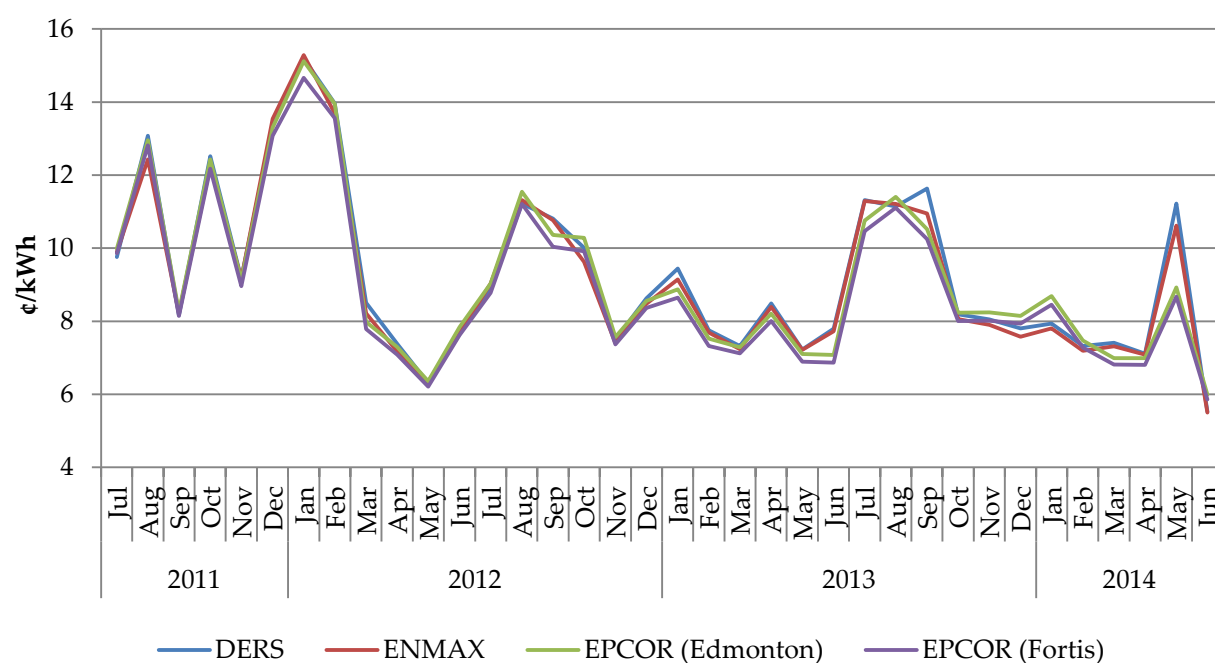
<sup>7</sup> The EPSPs were initially intended to expire at the end of June 2014; see AUC, “Application for Approval of a Settlement Agreement in respect of the 2011-2014 Energy Price Setting Plan” for EPCOR (Decision 2011-123), ENMAX (Decision 2011-486), and DERS (Decision 2011-199), respectively. However, the expiration dates were extended for several months as the subsequent EPSPs were not in place on time.

Figure 2.1: Electricity distribution systems / Zone



**Table 2.1: RRO provider by Zone**

Zone	RRO provider
ATCO	DERS, Lakeland REA
FortisAlberta	EPCOR Energy, Battle River REA, Duffield REA, Ermineskin REA, Equis REA, Lakeland REA, Mayerthorpe REA, Niton REA, North Parkland REA, Rocky REA, Wild Rose REA
Edmonton	EPCOR Energy
Lethbridge	City of Lethbridge
Calgary, Cardston, Crowsnest Pass, Ponoka, Red Deer	ENMAX Energy

**Figure 2.2: RRO prices paid by consumers**

The *RRO Regulation* requires a new RRO rate to be established for each calendar month; therefore, fluctuations in wholesale market conditions can affect RRO rates. Regulation requires the RRO for a particular month to be comprised entirely of forward energy products (i.e., hedges) procured at most 120 days in advance in order to set the regulated rate. RRO providers are not allowed to use rate adjustment mechanisms such as true-ups, rate riders, or deferral accounts to reconcile their costs for purchasing electrical energy with the revenues collected from customers.<sup>8</sup> However, RRO providers may propose a margin to cover risks such as volume risk (e.g., resulting from load forecasts), price risk, credit risk, and unaccounted for energy and losses.

Electricity consumers also pay transmission and distribution fees that are regulated by the AUC. These fees have a fixed component that does not vary month-to-month and a variable component based on the consumer's level of consumption.

<sup>8</sup> AUC, "Briefing to the Retail Market Review Committee," p. 3.

## 2.2 Default rate tariff for natural gas

The default rate tariff (DRT) is what consumers who have not signed a contract with a competitive retailer pay for natural gas; as such, it is analogous to the RRO for electricity. It fluctuates with the wholesale forward market for natural gas, and varies from month to month. By regulation, default suppliers provide natural gas at a flow-through cost<sup>9</sup> based on open and competitive North American market prices.<sup>10</sup> Most natural gas for the default rate is procured one to two months in advance of the delivery month.<sup>11</sup> The retailers establish what their cost of natural gas rate should be each month by first forecasting the consumption for the upcoming month. The forecast price is then determined using published Alberta Energy Company storage facility monthly and daily indices.<sup>12</sup>

Unlike the electricity market, there is not an ‘ineligible rate’ for large consumers without a contract. However, the physical separation of gas transmission and distribution pipeline systems effectively creates an implicit threshold for large natural gas consumers, as many large customers are connected to natural gas transmission systems as opposed to distribution systems—it is only distribution system owners that are required to provide or, delegate the provision of, a DRT per the *Gas Utilities Act*.<sup>13</sup>

Natural gas supply costs are additional costs borne by consumers. The AUC states:

Gas supply costs are dealt with as a separate component but are also approved by the AUC. Utilities are not permitted to make a profit on the supply cost of gas. It is a flow-through cost that is passed on to consumers. Distribution costs, which is the cost to deliver the gas to the consumer from the gas delivery point, are approved either through General Rate Applications, a thorough review which involves many financial aspects of the company, or through a negotiated settlement process between the affected parties.<sup>14</sup>

Under the *Default Gas Supply Regulation*, unlike the *RRO Regulation*, true-ups and deferral accounts are used in place of risk margins to correct for price and volume forecasting errors. The deferral mechanism is implemented through future prices, so sometimes price changes are large as the market moves from high gas use months to low gas use months. In addition, the Government of Alberta also has the ability to exercise a natural gas rebate when natural gas prices are higher than certain thresholds. This has not been exercised since 2009 due to low natural gas prices.

In the ATCO-North and -South zones, the DRT is provided by DERS; AltaGas provides its own DRT in its zone. The major natural gas distribution systems are illustrated in Figure 2.3 and DRT prices paid by consumers over the period July 2011 to June 2014 are illustrated in Figure 2.4.

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<sup>9</sup> A cost to the consumer without intermediate markup by the default supplier. In Alberta, this is either the Gas Cost Recovery Rate (GCRR) for AltaGas Utilities Inc. or the Gas Cost Flow-Through Rate (GCFR) for DERS.

<sup>10</sup> AUC, “Rates & Tariffs: Natural Gas.”

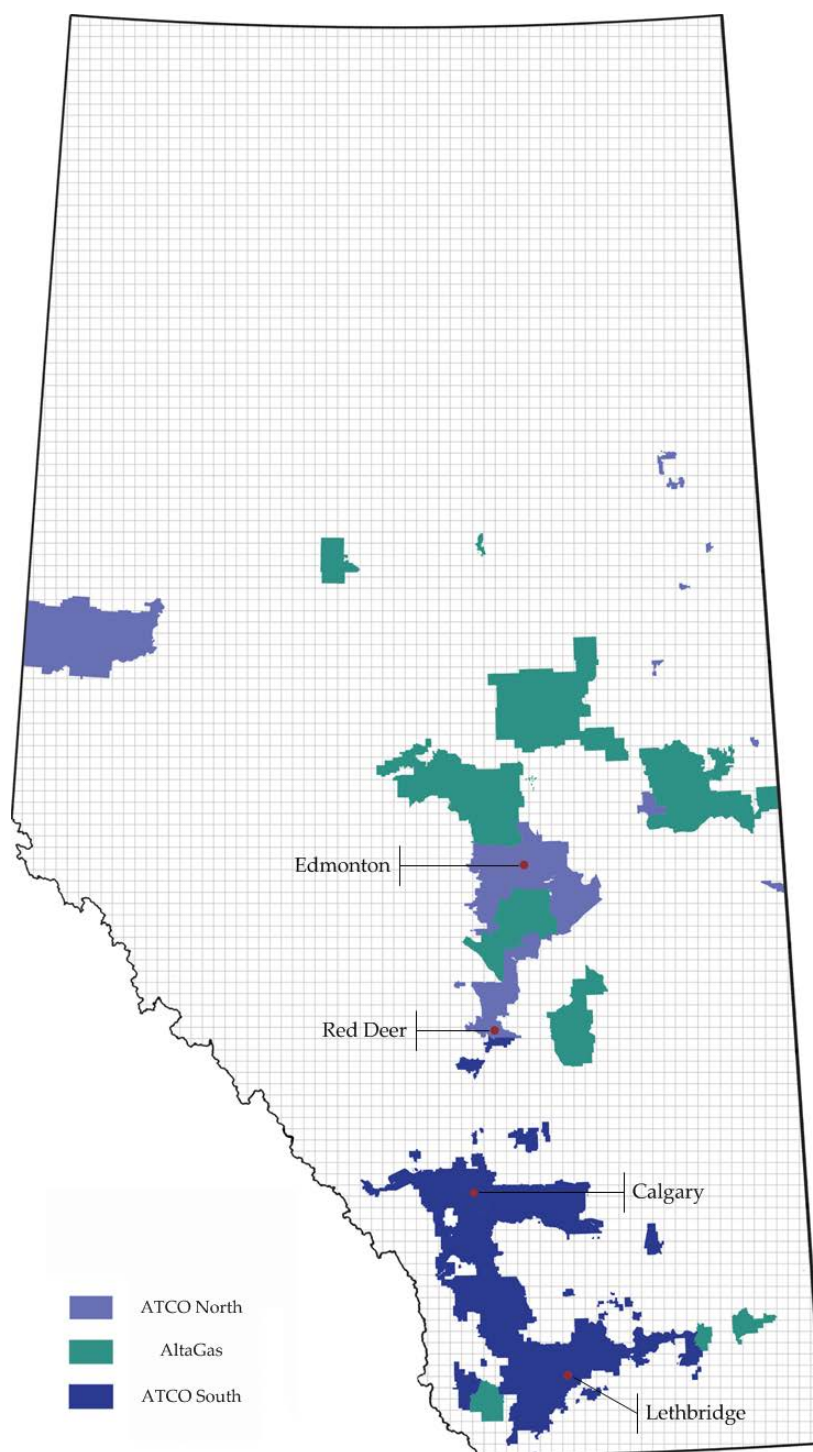
<sup>11</sup> MSA, “Retail Review: Electricity & Natural Gas,” p. 5.

<sup>12</sup> AUC, “Natural Gas Utilities,” p. 3.

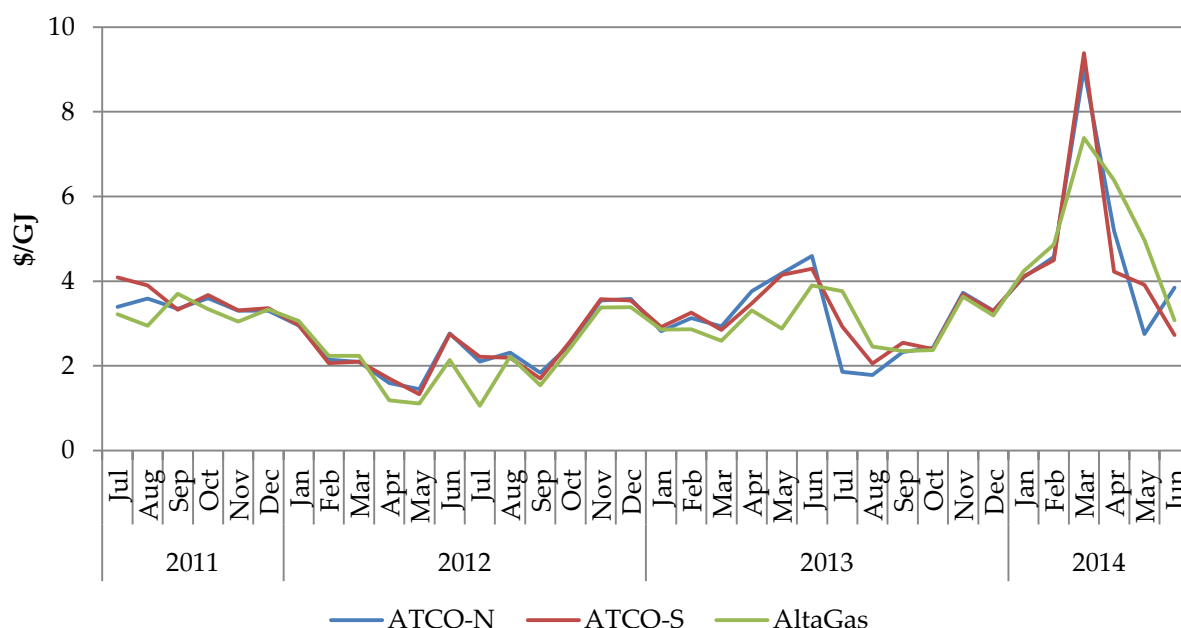
<sup>13</sup> AUC, “Regulated Retail Harmonization Inquiry,” p. 51.

<sup>14</sup> AUC, “Alberta’s Energy Market.”

**Figure 2.3: Major natural gas distribution systems / Zone**



Note: Major city markers are placed for reference purposes. The cities are considered part of the zone in which they are contained.

**Figure 2.4: DRT prices paid by consumers**

## 2.3 Codes of conduct

Regulated electricity and natural gas distributors in Alberta are subject to codes of conduct. With respect to the provision of retail services, the purpose of these is to prevent distributors from distorting the retail market by giving their retail affiliates an unfair competitive advantage over other competitors. Among other things, the codes of conduct prevent the regulated distributor and its retail affiliates from advertising or representing that supply from them would be more reliable than supply from other retailers or from discriminating against the customers of any retailer. As discussed below, some consumers incorrectly believe the quality of their service would be affected if they changed retailers.

The codes of conduct also place significant weight on maintaining the confidentiality of consumers' personal data, including consumption amounts. Electricity codes of conduct compliance plans are subject to approval and enforcement by the MSA; natural gas codes of conduct compliance plans are subject to approval and enforcement by the AUC.<sup>15</sup>

## 2.4 Competitive contracts

Throughout the province, competitive retailers offer Albertans pricing alternatives to the aforementioned RRO. Fixed-rate options allow consumers to lock in a particular price for up to five years, thereby ensuring stability to their price. These contract rates are not necessarily below RRO rates as the latter can vary above or below established contract prices. The extent to which a consumer wishes to mitigate volatility in prices is crucial to informing the type of contract into which they enter, or whether to sign a contract at all. Many retailers offer budget billing / equalized payment plans to their customers. Under these arrangements a consumer's energy costs are averaged over the year, usually based on previous

<sup>15</sup> It is expected that by 1 January 2015 the AUC will oversee all codes of conducts.

consumption and charges and forecasted energy prices. Variable rate options allow consumers to pay rates based on the unregulated pool price for electricity or some other variable characteristic.<sup>16</sup>

In natural gas, as with the electricity market, competitive retailers offer contracts for up to five-year terms. In addition to single-fuel offerings, a number of competitive retailers offer contracts for both electricity and natural gas, so-called dual-fuel contracts. For example, a consumer could sign a fixed electricity-floating natural gas rate dual fuel contract, i.e., one is not obligated to enter into a fixed or floating rate for both products.

Service Alberta licenses competitive retailers but does not regulate their prices. Service Alberta reviews the companies' retail contracts before granting the license to offer competitive electricity and / or natural gas service.<sup>17</sup> Customers can choose a retailer that offers various options including fixed price contracts, floating rates, dual fuel (electricity and natural gas) services, seasonal plans, and green energy products, i.e., purchasing a guarantee that a certain amount of electrical energy is generated by renewable sources.

The *Energy Marketing and Residential Heat Sub-metering Regulation* under the *Fair Trading Act* regulates the manner in which electricity and natural gas retailers can sell their products to smaller customers. For example, the regulation allows consumers to cancel the contract without penalty within 10 days after a copy of the marketing contract, signed by the consumer, is received by the marketer.<sup>18</sup>

## 2.5 Self-retailers

This section defines and discusses the role of self-retailers in the market. Self-retailers are those, typically large commercial and industrial, customers that purchase electricity and / or natural gas from the wholesale market for their own use. As such, self-retailing represents an alternative energy purchasing arrangement to contracts or default rates. All electricity self-retailers are charged the pool price plus a trading charge in order to compensate the AESO for market operation.

For electricity procurement, a potential self-retailer must apply to the AESO in order to become a wholesale market participant. This process requires the completion of an application form, the provision of banking information, the payment of a participation fee (\$150), and purchase of a digital certificate to access the trading software (\$100). The self-retailer must also meet AESO financial security requirements: the amount of the security is the financial obligation amount owing to the AESO for two settlement periods (two months)<sup>19</sup>, less any unsecured credit limit granted by the AESO.<sup>20</sup> Finally, the self-retailer must arrange transmission/distribution access for all its facilities by contacting the applicable of ATCO Electric, ENMAX Power, EPCOR, FortisAlberta, and / or the City of Lethbridge.<sup>21</sup> Simple statistics regarding the total number of sites and load served by self-retailers is reported in Table 2.2.

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<sup>16</sup> For instance, ENMAX Energy offers a competitive variable rate contract that is a function of the prevailing natural gas price. See ENMAX, "ENMAX Energy Corporation Default Supplier – Rate Schedule (Calgary)."

<sup>17</sup> Service Alberta, "Marketing of Gas and/or Electricity Business Licence."

<sup>18</sup> Section 10(1)(a)(ix).

<sup>19</sup> This is based on the actual net energy consumed for the two most recent settlement periods multiplied by the estimated pool price.

<sup>20</sup> AESO, "Credit Procedures Guide."

<sup>21</sup> AESO, "Becoming a Self-Retailer."

**Table 2.2: Percentage of electricity sites and load served by self-retailers, 2013**

Rate Class	% of Total Sites in Rate Class	% of Total Consumption in Rate Class
Residential	0.02%	0.03%
Small Commercial	6.27%	10.14%
Large Industrial	17.93%	30.18%
Farms & Irrigation	0.02%	0.15%

## 2.6 Rural Electrification Associations, natural gas co-ops, and municipalities

### 2.6.1 Rural Electrification Associations (REAs)

Rural Electrification Associations (REAs) are established through the *Rural Utilities Act* and are not-for-profit rural cooperatives that own an electricity distribution system that provide and distribute electricity to its members.<sup>22</sup> REAs were formed in the 1940s, as investor-owned utilities were not interested in providing service to rural Alberta due to high costs. REA Boards of Directors are the regulatory authorities (instead of the AUC) mandated to approve RRO rates for their constituents. The AUC also has limited jurisdiction to hear complaints about the distribution tariffs of REAs.<sup>23</sup>

The Alberta Federation of Rural Electrification Associations is the provincial association that advocates for and represents REAs collectively. As of June 2013, it is responsible for administering the Rural Electric Program, a cost-sharing program which helps defray the high cost of electrical service to farmers.<sup>24</sup> Based on figures collected from Alberta Federation of Rural Electrification Associations and (load settlement) agents, REA sites represent approximately 38% of the number of farm and irrigation sites in the province.

At one time, Alberta was served by over 400 individual REAs. Over time this number declined to 36 as the result of purchases by investor owned utilities or mergers; these are illustrated in Figure 2.3.<sup>25</sup> A recent example of a merger is that of the newly formed EQUUS REA, resulting from the amalgamation of the Central Alberta and South Alta REAs. For mergers and acquisitions, the Alberta's *Hydro and Electric Energy Act*<sup>26</sup> gives the AUC oversight over the service areas of distribution systems. An electric distribution system service area may not be altered without approval by the AUC. The Director of REAs, with authority from the *Rural Utilities Regulation*<sup>27</sup>, must also approve the amalgamation. Section 23 of the *Rural Utilities Act* allows an REA to sell its system to an investor owned utility while section 24 grants the ability for rural utility associations to amalgamate.

Notably, per the *RRO Regulation*,<sup>28</sup> REAs are exempt from the requirement to provide financial security to the AESO in order to access the power pool to meet its obligations under its regulated rate tariff.

<sup>22</sup> Adapted from RMRC, "Power for the People," p. 182.

<sup>23</sup> AUC, "Electricity and the AUC," p. 9.

<sup>24</sup> Alberta Federation of Rural Electrification Associations, "AFREA Takes on Program."

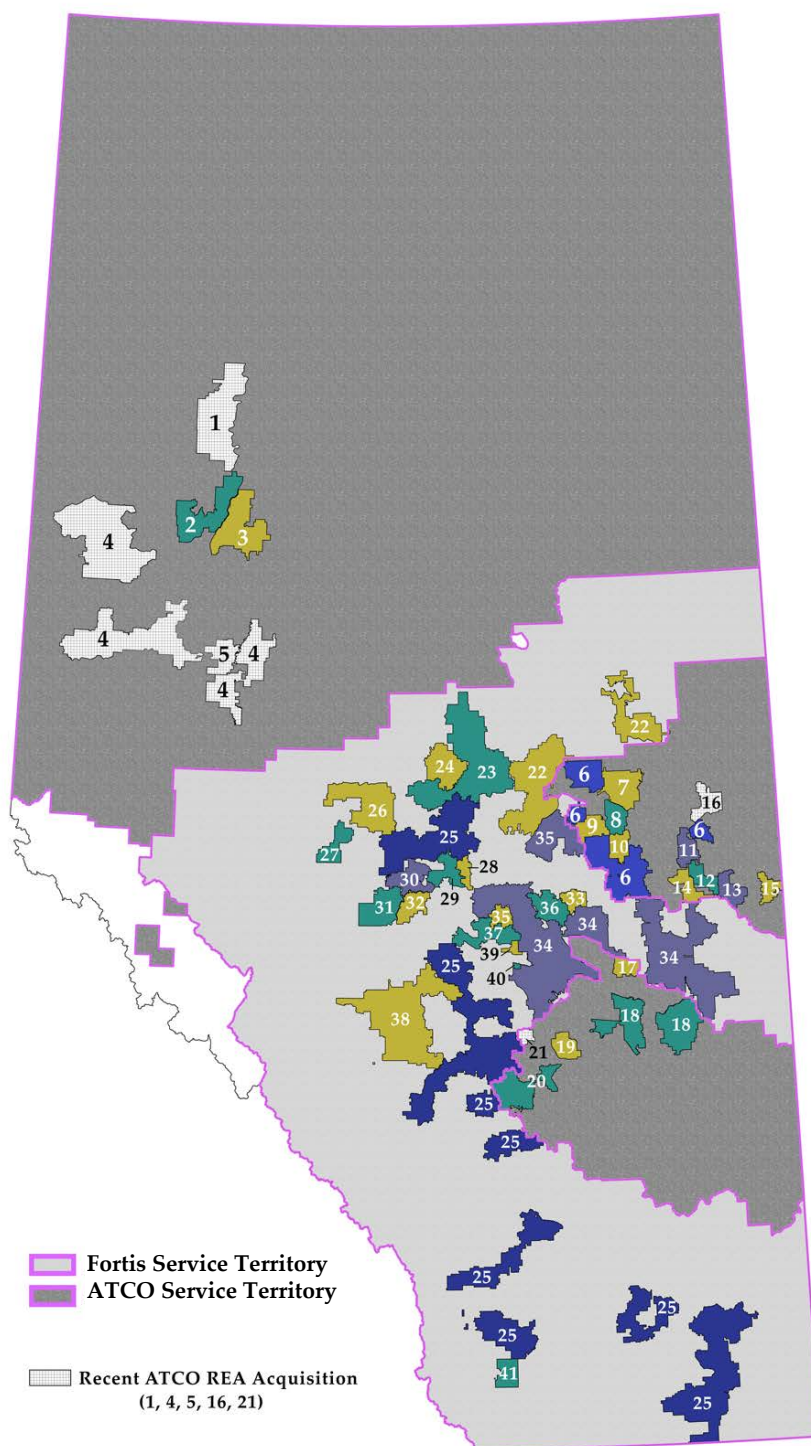
<sup>25</sup> This number does not include REAs with a completed sale or sale in progress.

<sup>26</sup> Sections 25, 29, and 31.

<sup>27</sup> Sections 15 through 18.

<sup>28</sup> Section 21.

Figure 2.3: Map of REAs



**Table 2.4: REA map legend**

<b>ATCO (1 - 21)</b>		<b>Fortis (22 - 41)</b>	
1	Manning (Sold)	22	North Parkland Power
2	MacKenzie	23	Wild Rose
3	Heart River	24	VNM
4	Peace Country (Sold)	25	EQUUS
5	Valleyview (Sold)	26	Mayerthorpe
6	Lakeland	27	Niton
7	Stry	28	Stony Plain
8	Willingdon	29	Duffield
9	Zawale	30	Tomahawk
10	Warwick	31	Drayton Valley
11	Myrnam	32	Lindale
12	Claysmore	33	Kingman
13	Borradaile	34	Battle River
14	Braes	35	West Liberty
15	Devonia	36	Armena
16	Elk Point (Sold)	37	West Wetaskiwin
17	Sterling	38	Rocky
18	Beaver	39	Ermineskin
19	Fenn	40	Montana
20	Kneehill	41	Peigan Indian
21	Delburne West (Sold)		

Choice is a tenet of the *Electric Utilities Act*, which declares that “a customer has the right to obtain electricity services from a retailer.”<sup>29</sup> As reported by the AUC, many REAs do not meet the standards set out in their *Alberta Tariff Billing Code*.<sup>30</sup> As REAs are not under the jurisdiction of the AUC, they are not bound to comply with the code.

There are certain geographic areas in Alberta where competitive retailers are unable to provide their retail energy services. These areas are mainly in the service areas of certain municipalities and rural electrification associations. The distribution utilities in these service areas have not adopted the business practices prescribed in AUC Rule 004; *Alberta Tariff Billing Code*, and without these standardized business practices being in place, competitive retailers are unwilling to pursue customers in these service areas.<sup>31</sup>

Other deterrents to market choice include automatically-renewing, perpetual agreements that some REA members are locked into unless they provide a cancellation notice four years in advance.<sup>32</sup> Further, it appears other REAs limit volatility to the end consumer in determining their RRO rate.<sup>33</sup>

<sup>29</sup> Section 110.

<sup>30</sup> AUC, AUC Rule 004.

<sup>31</sup> AUC, “Briefing to the Retail Market Review Committee,” p. 19.

<sup>32</sup> Alberta Agriculture and Rural Development, “Presentation to the Retail Market Review Committee.”

<sup>33</sup> For example, Niton REA has maintained an RRO tariff of 8 cents per kilowatt hour since at least August 2012 to at least June 2014. See Nitro REA, “Rates.”

### 2.6.2 Natural gas co-operatives

Similar to REAs, natural gas co-ops are not-for-profit rural cooperatives that own a natural gas distribution system in order to provide natural gas service to their members. The Federation of Alberta Gas Co-ops is the provincial association that represents and advocates on behalf of natural gas co-ops collectively. As of April 2014, its members include 53 rural co-operatives, 5 counties, 12 towns, 5 villages, and 6 First Nations, for a total membership of 81.<sup>34</sup> All members of the Federation of Alberta Gas Co-ops are shareholders in Gas Alberta, and purchase their gas exclusively from it.<sup>35</sup>

A stark difference between the retail electricity and natural gas markets is the exclusion of the franchise areas of municipalities and rural gas utilities (the latter granted franchise through the *Gas Distribution Act*) from section 28.1(3) of the *Gas Utilities Act* which states that a customer has the right to obtain gas services from a retailer or default supply provider. The *Gas Distribution Act* grants an exclusive right and duty to offer / provide gas services to a franchise holder within a rural gas utility franchise area. One impact of this legislation is that it does not allow dual-fuel contracts to be offered to many rural consumers. These franchise holders are not obligated to construct a default rate tariff for regulatory approval, and instead determine their own rates. The Federation of Alberta Gas Co-ops estimates that total usage across member zones is 25 million GJ of natural gas in a typical year.<sup>36</sup>

The AUC notes that it “has limited complaint authority over natural gas co-ops. It may hear complaints about terms of service, service charges, and rates or tolls if a customer thinks they are discriminatory, improperly imposed, or fail to conform to the co-op’s established rate structure.”<sup>37</sup>

### 2.6.3 Municipalities

A number of municipalities own their own electricity distribution systems, including Calgary, Edmonton, Red Deer, and Lethbridge, Cardston, Fort Macleod, Ponoka, and Crowsnest Pass. Each of these, except Edmonton and Lethbridge, appointed ENMAX Energy Corporation to be their RRO provider. EPCOR is the RRO provider in Edmonton and Lethbridge provides its residents its own RRO service. These systems, with the addition of ATCO and FortisAlberta, coincide with zones as depicted in Figure 2.1.

With respect to municipalities, the Retail Market Review Committee (RMRC) stated:

Like REAs, small municipalities are also not required to comply with the Tariff Billing Code. The Alberta Utilities Commission believes that, for all intents and purposes, the exemption for municipalities means residents of these municipalities are prevented from exercising choice. As with the REAs, there are not enough customers in smaller municipalities to make it worthwhile for a retailer to develop a special billing system for one municipality. The prudential security requirements set by distribution utilities in smaller communities may also be a prohibitive barrier. Fixed costs must be spread over a small number of customers.

There is some disagreement about whether REAs and small municipalities are subject to the Tariff Billing Code. Sections 129(1) and 129(2) of the *Electric Utilities Act* empower the Alberta Utilities Commission to make rules regarding the service standards of electric utilities and to ensure compliance. “Service

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<sup>34</sup> Federation of Alberta Gas Co-ops, “Who We Are.”

<sup>35</sup> Gas Alberta, “Our Services.”

<sup>36</sup> Federation of Alberta Gas Co-ops and Gas Alberta.

<sup>37</sup> AUC, “Natural Gas Utilities,” p. 11.

standards” are broadly defined, and include rules like the Tariff Billing Code (Electric Utilities Act, p. 77). The AUC believes it has no jurisdiction over REAs and small municipalities because they are only distribution wire owners, not “electric utilities” as defined in the act. On the other hand, the Alberta Department of Energy believes section 105(1)(n) of the *Electric Utilities Act* does give the AUC jurisdiction. That section specifically gives the AUC the power to make rules relating to billing, billing services, and “...process, procedures and standards for transfer of data relating to distribution tariffs” for distribution systems that are not electric utilities. The Market Surveillance Administrator concurs that the law is not clear, citing overlapping and unclear regulations. Overall, there appears to be reluctance for any agency to impose government policy on REAs (as self-governing cooperatives) or on municipal authorities without explicit and clear direction.

(Footnotes and references in original omitted.)<sup>38</sup>

The Alberta Urban Municipalities Association represents and advocates to the provincial government on behalf of Alberta’s 272 urban municipalities including cities, towns, villages, summer villages, and specialized municipalities, among others.<sup>39</sup> One of its subsidiaries offers the Alberta Municipal Services Corporation Energy Program<sup>40</sup>, which is an electricity and natural gas procurement service for member municipalities (and municipally related organizations) if they choose to participate.

The rural equivalent of Alberta Urban Municipalities Association is the Alberta Association of Municipal Districts and Counties. It represents and advocates to the provincial government on behalf of 69 municipal districts, counties, and specialized municipalities in Alberta. These rural municipalities include hamlets, but not the villages, towns and cities within their borders.<sup>41</sup> The latter are under the Alberta Urban Municipalities Association umbrella.

Both the Alberta Urban Municipalities Association and Alberta Association of Municipal Districts and Counties are often asked to comment on a variety of matters, including policy with respect to utilities, in order to provide the perspectives of their members. Recently, the RMRC gathered submissions from both entities to provide additional perspectives in the review process.

## 2.7 Medicine Hat

The City of Medicine Hat is located in Southeast Alberta and is home to approximately 61,000 residents as of June 1, 2012<sup>42</sup>, making it the fifth-largest municipality in the province. Residents of Medicine Hat must purchase electricity from the municipal utility and, as a general rule, the city (and its service area<sup>43</sup>, including Redcliff) is exempt or is given special consideration from provincial electricity and natural gas legislation and regulations<sup>44</sup>. The city owns generation, distribution, and establishes utility rates for residents. Medicine Hat also has regulation tailored to it for the purpose of payment in lieu of taxes.<sup>45</sup> In one sense, the city could be viewed as a distinct importer/exporter on the grid—as the city generates its

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<sup>38</sup> RMRC, “Power for the People,” p. 116-7.

<sup>39</sup> Alberta Urban Municipalities Association, “About AUMA.”

<sup>40</sup> Alberta Urban Municipalities Association, “Energy Services.”

<sup>41</sup> Alberta Association of Municipal Districts and Counties, “Presentation to the Retail Market Review Committee.”

<sup>42</sup> City of Medicine Hat, “2012 Municipal Census.”

<sup>43</sup> *Electric Utilities Act*, section 1(4).

<sup>44</sup> *Electric Utilities Act*, sections 2, 100, and 109.

<sup>45</sup> *City of Medicine Hat Payment in Lieu of Tax Regulation*.

own electricity, it is connected to the grid only for standby power. This is reinforced in the definition of the interconnected electric system contained in the *Electric Utilities Act*:

[the interconnected electric system] means all transmission facilities and all electric distribution systems in Alberta that are interconnected, but does not include an electric distribution system or a transmission facility within the service area of the City of Medicine Hat or a subsidiary of the City...

### 3. Demand conditions

#### 3.1 Consumer characteristics and demand by customer sector

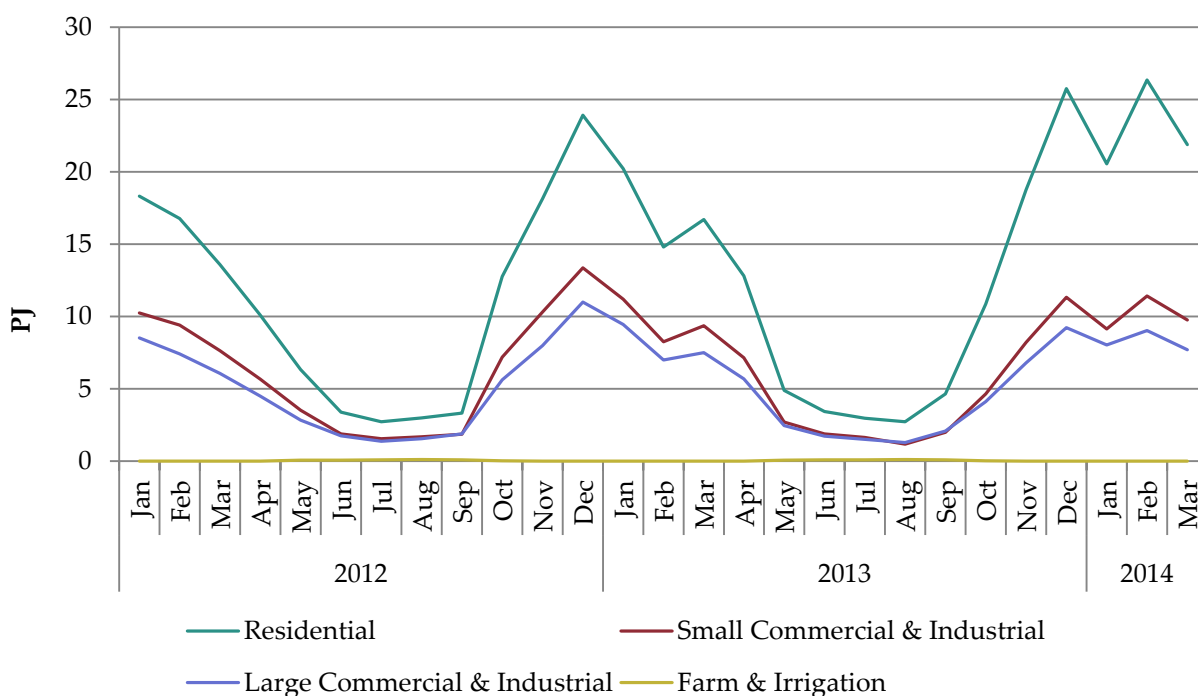
The MSA considers residential, small commercial and industrial, large commercial and industrial, and farm and irrigation to be the relevant customer classes in its assessments of both electricity and natural gas retail markets. The distinction between small and large commercial and industrial consumers is only the level of energy consumption; specifically, ‘large’ means annual consumption greater than 250 MWh of electricity or 8,000 GJ of natural gas.<sup>46</sup> ‘Small’ also includes unmetered sites, which tend to be minor and are not residential.

The following series of figures display the monthly electricity consumption by rate class from Q1 2011 to Q1 2014. Note in particular the seasonal nature of demand, which is much more pronounced in natural gas than electricity.

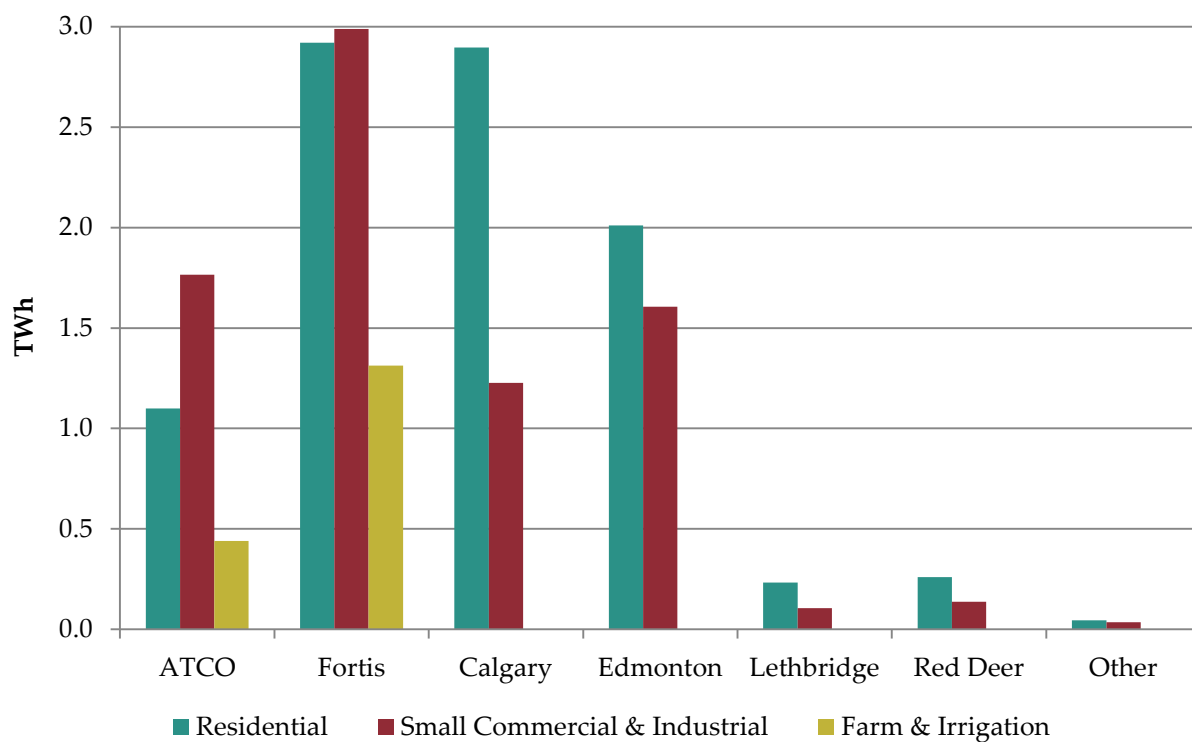
**Figure 3.1: Monthly electricity consumption by rate class**

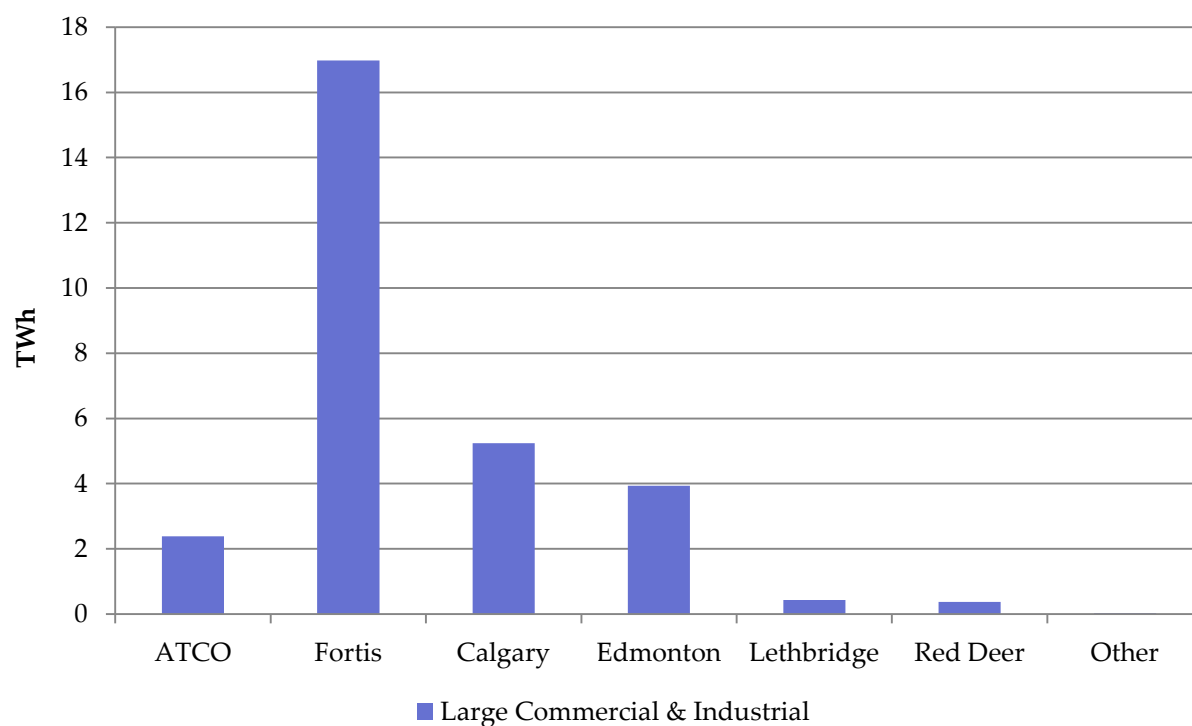
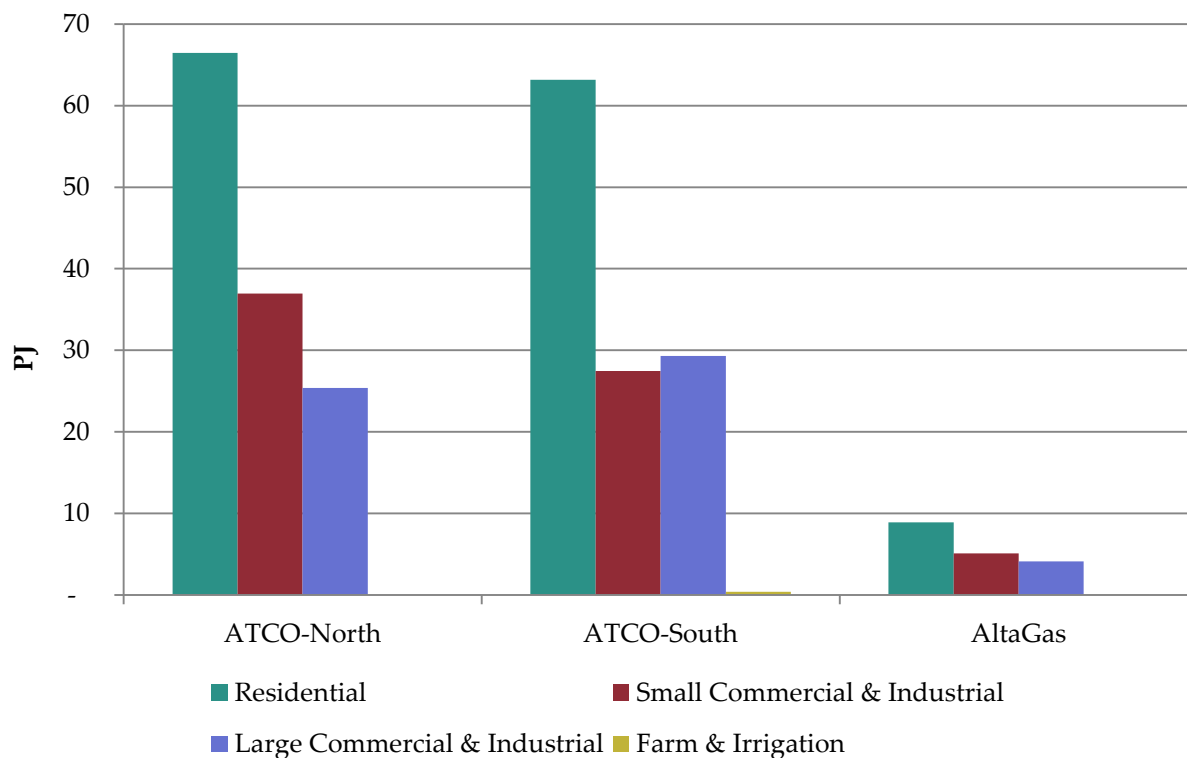


<sup>46</sup> The annual natural gas consumption threshold of 8000 GJ applies to consumers in ATCO-North and –South zones (combined market share of approximately 95%). The relevant threshold in the AltaGas zone is 5326 GJ (approximately 5% market share).

**Figure 3.2: Monthly natural gas consumption by rate class**

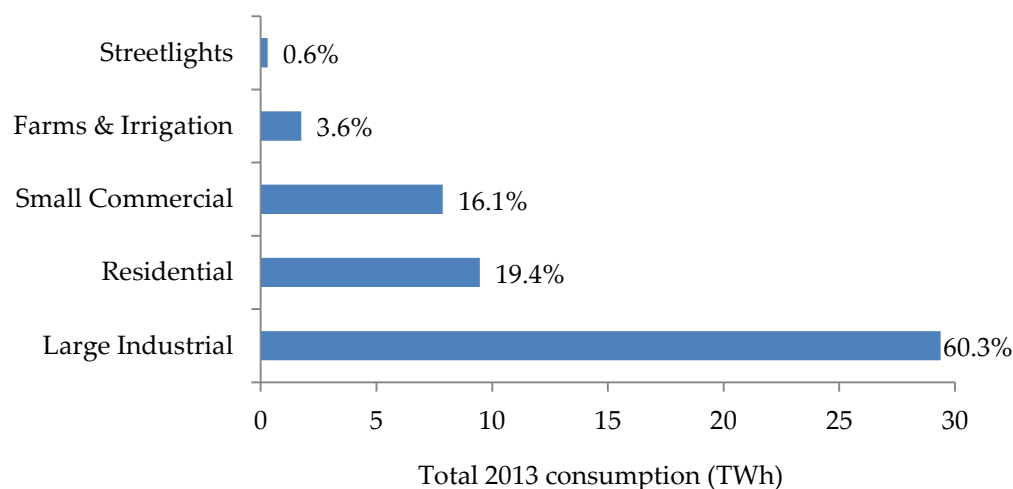
Consumption figures can also be illustrated by zone. Note that only two zones have farm and irrigation electricity consumption and only one zone reports natural gas farm and irrigation consumption.

**Figure 3.3: Electricity consumption of RRO-eligible consumers by zone, 2013**

**Figure 3.4: Electricity consumption by RRO-ineligible consumers by zone, 2013****Figure 3.5: Natural gas consumption by zone, 2013**

The next figure includes consumption by streetlights in order to capture the complete set of data. Given its insignificance, we have not discussed this rate class in this report.

**Figure 3.6: Total retail demand by rate class, 2013**



Finally, additional information regarding sites and volumes by zone and rate class is reported in the MSA's *Annual Retail Statistics Report 2014*.

## 3.2 Billing

### 3.2.1 General billing requirements

Electricity and natural gas billing are regulated by the *Billing Regulation* and the *Natural Gas Billing Regulation*, respectively; the *Distribution Tariff Regulation* also contains important billing-related rules. The billing regulations require a bill from a retailer or distributor for a customer to identify specific credits or charges, including the amount charged for energy, the amount charged by the retailer for administration, the amount paid for transmission/distribution for the customer's account, and the local access / franchise fee payable by the retailer for the customer's account. A bill must also include the customer's consumption of energy, site identification numbers, the time period for which the customer is charged, and distributor information.

A simpler approach to analyzing a consumer's electricity bill is to break it into three main categories of charges: energy, administration, and delivery. The energy and administration charges are specific to each retailer and offering; delivery charges, on the other hand, are regulated charges that differ by location and wires services providers. Delivery charges (with the exception of local access fees, which are established by municipalities) are approved by the AUC. As a general rule, all ratepayers of a given rate class in any particular location are expected to have their delivery charges calculated on the same basis. The exception to this occurs in rural areas, for example one consumer may pay different delivery charges in an REA territory than their neighbour in an adjacent territory.

There are several items in the delivery charge category. The most significant to a consumer are distribution tariffs which are intended to pay for the construction, maintenance, and operation of a local distribution system. Likewise, consumers also pay a transmission tariff that is intended to pay for the

construction, maintenance, and operation of the provincial electric grid. The AUC approves these delivery charges, with three principal steps:<sup>47</sup>

- 1) Establishment of a revenue requirement for transmission/distribution owners
- 2) Apportionment of costs to the various rate classes that access the transmission / distribution system
- 3) Design of the final rate to be paid by applicable consumers

Related to both distribution and transmission are a series of charges (or credits) referred to as ‘rate riders,’ which are approved by the regulator. Rate riders are short-term rates approved by the AUC that are displayed separately from the standard energy, distribution, and transmission tariffs on a consumer’s bill. Another rate rider is derived from the operation of the Balancing Pool. The Balancing Pool is an organization established by the *Electric Utilities Act* to help manage certain generation assets (notably hydro), revenues, and expenses arising from the transition to competition in generation industry. It is required to operate on a non-profit basis, which results in net revenues being allocated directly to consumers through the Balancing Pool rider. Recently, this rider has been a credit to consumers; however, should the Balancing Pool find its expenditures exceed its revenues, the shortfall would be funded through this rider as a charge to consumers.

Finally, consumers will pay local access fees which are charged by local / municipal governments to allow access to municipal lands for wires service providers to construct, maintain, and operate local distribution systems. Local governments provide distribution utilities with access to public roads and other rights-of-way for the placement of their equipment. In return for this access, they charge the utility a local access fee. Local access fees are a surcharge that municipalities levy on distribution system owners. Retailers collect these fees from customers and reimburse distribution system owners, who then pay the local authority; a local authority can be a municipality, county, municipal district, or First Nation. Local access fees are authorized under the *Municipal Government Act*<sup>48</sup> and are not regulated by the AUC.

With respect to natural gas, the billing model is similar. Notable exceptions include the Balancing Pool rider (as it is an entity of the electricity market) and a formal “transmission” component, although this is captured to some extent in the series of riders associated with natural gas. Local access fees are also commonly two components: the franchise access fee as well as a property tax rider assessed to gas distribution system owners.

### **3.2.2 Billing model and breakdown**

The ‘typical RRO customer’ is one that consumes the residential rate class average<sup>49</sup> number of kilowatt hours for each month. The number of kWh consumed is allowed to vary each month, but not across zones. That is, the consumer is representative of the average monthly consumption across all load settlement zones. Tariffs, fees, and riders vary by zone.

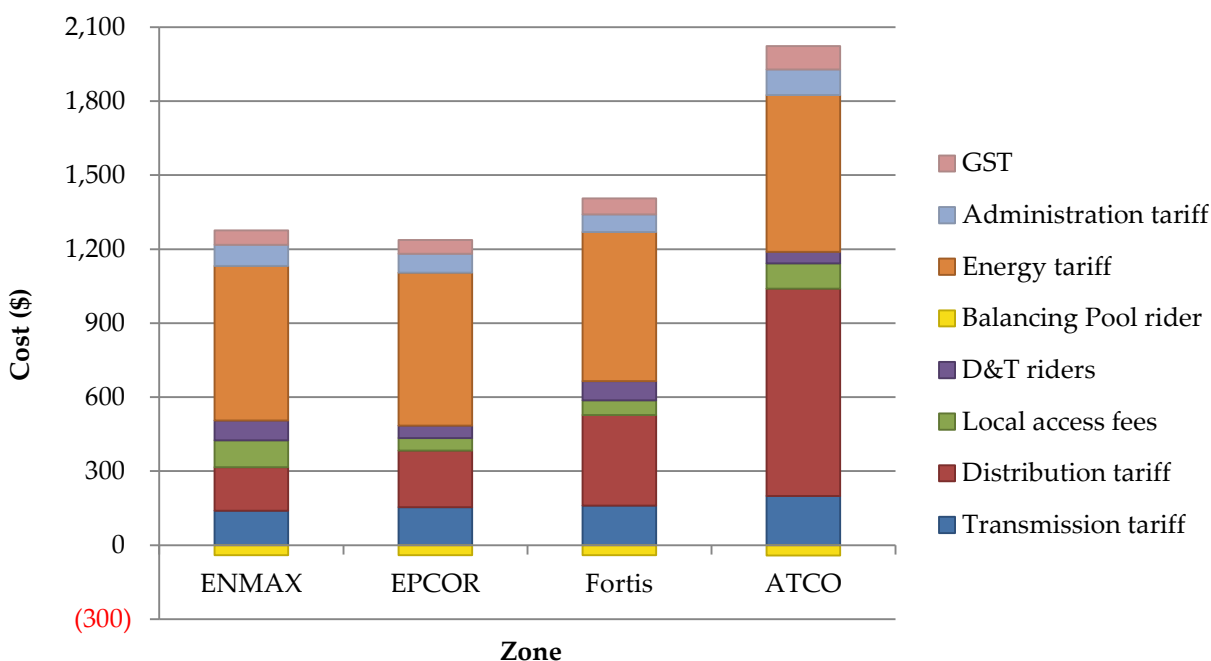
The only cost-components a consumer can affect through switching to a competitive contract are the energy and administration tariffs. The distribution and transmission tariffs, rate riders, and local access fees are established at a fixed daily rate and / or variable usage rate and are not affected by a consumer’s choice of regulated rate or competitive contract.

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<sup>47</sup> AUC, “Presentation to the Retail Market Review Committee (Audio).”

<sup>48</sup> Section 360.

<sup>49</sup> Aggregate sites and volume data by zone and consumer rate class is collected from agents by the MSA.

**Figure 3.7: Components of a typical RRO customer's annual electricity bill, 2013**

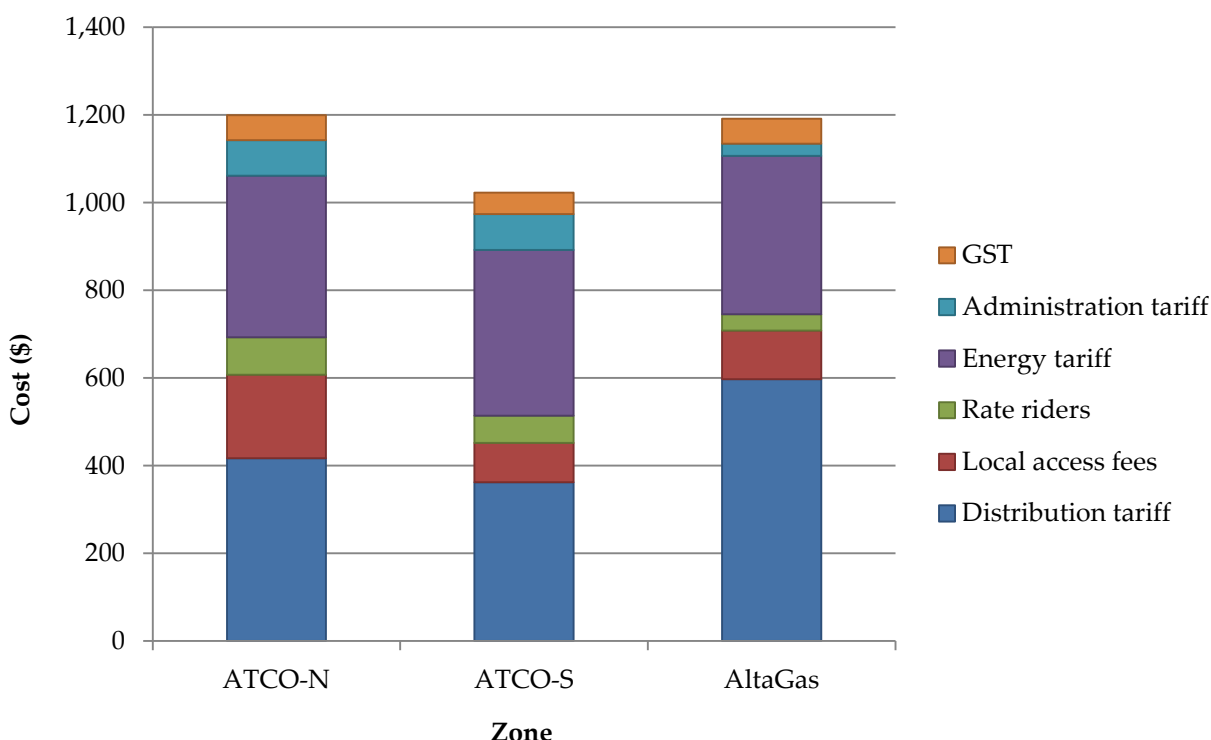
A typical resident in Calgary (ENMAX zone) pays slightly more than one in Edmonton (EPCOR zone). Higher distribution and transmission rate riders (\$81/year in Calgary compared to \$50 per year in Edmonton) along with higher local access fees (\$109/year in Calgary compared to \$51 in Edmonton) appear to more than offset the lower distribution tariff in Calgary (\$140/year in Calgary compared to \$154/year in Edmonton), and are the main drivers of the cost differential between the two cities.

In the FortisAlberta zone (represented by Hinton), the main cost difference compared to Calgary or Edmonton is the distribution tariff. This is not unexpected as the per-customer cost of building and maintaining the distribution system is greater in rural areas compared to urban areas.

In the ATCO zone (represented by Grande Prairie), the distribution tariff is significantly greater than in the other zones. Geographically, ATCO is the primary zone for the northern half of Alberta, as well as for two large centre-east zones adjacent to the Saskatchewan border (see Figure 2.1). The relatively low population density of these regions results in a higher average distribution cost of \$840 per year, which is 379% greater than in Calgary.

With respect to natural gas, the data are constructed analogously to the electricity model. It utilizes public data from AUC filings and DRT provider and distribution system owner websites. The 'average residential DRT customer' is a consumer that consumes the residential rate class average number of GJ for each month. The number of GJ consumed is allowed to vary each month, but not across load settlement zones. That is, the consumer is representative of the average monthly consumption across all zones. All tariffs, fees, and riders vary by zone.

As with the electricity example, the key cost components a consumer (assuming consumption is set at the monthly levels deployed in the model) can affect through switching to a competitive contract are the energy and administration components. The distribution and transmission tariffs, rate riders, and local access fees are established by a fixed daily rate and/or variable usage rate and are not affected by a consumer's choice of default rate or competitive contract.

**Figure 3.8: Components of a typical DRT consumer's annual natural gas bill, 2013**

A typical resident in the ATCO North zone (represented by Edmonton) pays slightly more for their natural gas service than in the AltaGas zone (represented by Athabasca). Geographically, both territories are located around the Edmonton and Athabasca regions. In the ATCO South zone (represented by Calgary), the key difference in cost is the local access fees. For instance, the annual local access fee in Edmonton is more than double the equivalent in Calgary, respectively \$191 and \$89.

### 3.2.3 Plain language billing and contracts

The “Plain Language Electricity Bill” project was successfully launched in November 2010 by the UCA, with all Alberta electricity retailers participating in the project committee. Two recommendations were made. The committee recommended that common set of terms and definitions be used on all invoices and the use of an invoice model that could be used by those retailers that are willing to change the format of existing invoices. Many retailers incurred a significant cost to upgrade their billing systems with the new recommended format, with cost estimates ranging from \$25,000 to \$3 million.<sup>50</sup> While most retailers stated their intention to adopt these recommendations, the decision to implement was optional.

Another plain language project was a pamphlet designed to accompany contracts sold door-to-door<sup>51</sup>. Developed by the UCA in co-operation with consumer groups, energy retailers and Alberta Department of Energy in 2006, this pamphlet is an alternative to the legal disclosure statement required by the *Energy and Heat Submetering Marketing Regulation*. The UCA reports that most competitive energy retailers use the contract folder.<sup>52</sup>

<sup>50</sup> UCA, “Presentation to the Retail Market Review Committee.”

<sup>51</sup> UCA, “Understanding Your Energy Contract.”

<sup>52</sup> UCA, “Presentation to the Retail Market Review Committee.”

### 3.3 Consumer advocacy and education

Knowledgeable consumers are able to make informed choices about their electricity and natural gas providers and the different purchasing options available to them, and thus contribute to the effectiveness of the competitive retail market. In order to facilitate access to information for consumers, the UCA was created in 2003. The UCA also advocates on consumers' behalf during regulatory proceedings; works closely with other government agencies and utility service providers to ensure that consumer interests are addressed in policies, regulations and industry practices; advocates for an equitable distribution of rates among all rate classes, a balance between individuals and classes of consumers, and fair consideration of consumers' current and long-term interests; and investigates and mediates consumer concerns with utility companies.<sup>53</sup>

For larger consumers, the Industrial Power Consumers Association of Alberta and the Alberta Direct Connect Consumers Association provide a consumer advocacy function. Other entities are often represented at various hearings held by the AUC. Organizations represented at a rate hearing may include those identified previously, such as Alberta Federation of Rural Electrification Associations, the Federation of Alberta Gas Co-ops, Alberta Urban Municipalities Association, and the Alberta Association of Municipal Districts and Counties, but also various First Nations, the Alberta Irrigation Projects Association, and the Public Institutional Consumers of Alberta. On the other hand, consultation parties to EPSPs (related to RRO procurement) are specifically the UCA and CCA.<sup>54</sup>

In 2010, Ipsos-Reid conducted a survey on behalf of the UCA and reported that consumers favour the availability of quality information, instead of increasing the quantity of information. Furthermore, Ipsos-Reid identified that Albertans are very confused about the utility marketplace, including choice, terminology, prices, and billing.<sup>55</sup> An RMRC survey<sup>56</sup> finds that 40% of Albertans understand they have a choice but find comparing options challenging. Conversely, 14% of Albertans found their bill difficult to understand. The RMRC survey also reported that 52% of Albertans wrongly felt that switching off the RRO would affect service reliability.

Further, the RMRC survey found that 54% of Albertans were equally concerned about energy and non-energy charges, while 29% of were most concerned about non-energy charges as opposed to 8% that were concerned about energy charges. This response is intuitive in light of the billing discussion in section Billing, the distribution and transmission components represent a significant portion of the overall utility bill, and the manner in which specific rates are determined by the regulator is likely more difficult to understand than the energy charge. As discussed previously, the only rate-based variables that may be chosen by the consumer are the energy rate and the administration charge. This is not to say that a consumer would not evaluate competitive options for other reasons, such as dual fuel and green-product offerings or perhaps to seek out improved customer service.

In 2013, the MSA, in conjunction with the UCA, retained Leger—a market research firm—to survey Alberta consumers about the effects of co-branding. The results indicated that a high number of consumers are not aware of the identity of their electricity or natural gas distributor and that many consumers confuse their retailer with their distributor. Many consumers also believe that their choice of retailer can affect the reliability of service. While this is not true, such beliefs may influence their decisions about changing retailers. Thus, while a structural feature of the retail market, co-branding

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<sup>53</sup> UCA, "What We Do."

<sup>54</sup> UCA, "Presentation to the Retail Market Review Committee."

<sup>55</sup> UCA, "Presentation to the Retail Market Review Committee."

<sup>56</sup> RMRC, "Power for the People," pp. 248-81.

clearly affects the competitiveness of retail markets. Moreover, consumers tend to prefer to receive fewer utility bills. In Alberta's two major cities distributors provide consolidated billing services for municipalities, e.g., water services. While no co-branding per se, this represents a barrier to entry of energy retailers.

### **3.4 Metering and demand response capabilities**

An inquiry into smart grid development in Alberta was conducted in 2010-2011 by the AUC at the request of the Minister of Energy. Smart meters and advanced metering infrastructure (AMI) make it possible for customers to see changes in the price of electricity during the day and to move some of their usage from times when prices are higher to times when prices are lower and to have these changes in their time of consumption reflected on their bill and potentially lower their energy costs. Typically, residential and small commercial consumers have cumulative meters that only measure how much electricity was used in total since the last time the meters were read. Few residential and small commercial customers in Alberta have smart meters installed at their home or premises. FortisAlberta, ATCO Electric, and the City of Lethbridge have already deployed remote/automatic meter reading in order to reduce meter reading expenses.

AUC Rule 021 (System Settlement) requires sites that exceed the profiling cap (i.e., demand greater than 2 MW) to utilize an interval meter. Distribution utilities may set a lower threshold in their own operating conditions and policies.<sup>57</sup> The AUC states:

Currently there are approximately 7,000 interval meters installed in the province mainly at industrial and large commercial sites. The amount of electrical energy that these interval-metered sites are consuming on an annual basis represents approximately 60 per cent of the total electrical energy consumption in the province. Interval meters are not new, but they are similar to smart meters in the ability to record consumption data for multiple price periods. They are also connected to the distribution entities business offices by electronic communications. Many of the interval meters have direct real-time communications with the customers' operations.<sup>58</sup>

Other key observations from the inquiry are outlined below:

Real-time pricing sounds good, but residential and small commercial customers are unlikely to spend their days in front of a pricing display and then run around turning appliances and lights off and on in response to price changes. While some customers may choose to incur the expense of automatic devices that will turn appliances off and on in response to price changes, they may not choose to live with this automatic interference with their comfort and convenience. What is more likely to be successful is that there are two or three time periods during the day with pre-determined hours and prices (footnotes omitted).<sup>59</sup>

It does not appear that private operational and customer benefits [currently] exceed the cost of deploying smart meters and AMI for most residential and

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<sup>57</sup> AUC, AUC Rule 021, p. 18. For example, ENMAX typically installs interval meters for at sites that record peak demand of 150 Kva or greater at least twice annually; see ENMAX, "Meter Reading and Data Management Services."

<sup>58</sup> AUC, "Alberta Smart Grid Inquiry," p. 29.

<sup>59</sup> AUC, "Alberta Smart Grid Inquiry," p. 6-7.

small commercial customers, since there is not a groundswell of demand for the services they can enable.<sup>60</sup>

**Table 3.1: Summary of smart grid development potential benefits and costs<sup>61</sup>**

Potential benefits	Potential costs
<ul style="list-style-type: none"> <li>• Productive and allocative efficiencies (i.e., societal benefits from the more efficient use of resources in the generation of electricity)</li> <li>• Lowered energy costs to the consumer from modified behaviour</li> <li>• Avoided metering costs for meter reading, connects and disconnects improved outage avoidance and restoration information</li> <li>• Reduction in greenhouse gases and other emissions</li> <li>• Creation of jobs</li> <li>• Provide for additional choice in the competitive market</li> </ul>	<ul style="list-style-type: none"> <li>• Stranded investment costs (related to the existing meters that are removed)</li> <li>• Incremental cost of the smart meters (compared to the meters that might otherwise be installed)</li> <li>• Incremental installation costs</li> <li>• Cost of the AMI (or upgrades to existing AMI) and the communications links</li> <li>• Incremental operational and maintenance costs</li> <li>• Cost of individual programs (e.g., a direct load control program that involves smart meters communicating with appliances will have costs associated with this communication and control function)</li> </ul>

<sup>60</sup> AUC, “Alberta Smart Grid Inquiry,” p. 9.

<sup>61</sup> AUC, “Alberta Smart Grid Inquiry,” p. 27-9.

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The Market Surveillance Administrator is an independent enforcement agency that protects and promotes the fair, efficient and openly competitive operation of Alberta's wholesale electricity markets and its retail electricity and natural gas markets. The MSA also works to ensure that market participants comply with the Alberta Reliability Standards and the Independent System Operator's rules.