



Customer Guide to New Extensions

- A Guide for Connecting Load Customers and Power Producers •

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Table of Contents

CHAPTER 1 INTRODUCTION	5
1.1 Basic steps to extend service	5
CHAPTER 2 ATCO ELECTRIC AT A GLANCE	7
2.1 Welcome to ATCO Electric	7
2.2 Service area map.....	8
2.3 Regulatory	9
CHAPTER 3 ALBERTA'S ELECTRICITY MARKETPLACE	10
3.1 Roles and Responsibilities.....	10
3.2 References and Readings	11
CHAPTER 4 BASIC CONCEPTS	13
4.1 Energy & Demand.....	13
4.2 Load Factor.....	14
4.3 Power Factor	14
CHAPTER 5 APPLICATION FOR NEW OR CHANGES TO SERVICE	15
5.1 Types of Services	15
5.1.1 Residential Service (Price Schedule D11).....	15
5.1.2 Standard Small General Service (Price Schedule D21)	15
5.1.3 Large General / Industrial Service (Price Schedule D31)	15
5.1.4 Large General / Industrial Service (Price Schedule T31)	15
5.1.5 Small Oilfield and Pumping Power Service (Price Schedule D41)	15
5.1.6 REA Farm Service (Price Schedule D51, D52)	15
5.1.7 Company Farm Service (Price Schedule D56).....	15
5.1.8 Street Lighting Service (Price Schedule D61)	16
5.1.9 Private Lighting Service (Price Schedule D63).....	16
5.2 New Additions or Changes to Services	16
5.2.1 The importance of working together	16
5.2.2 When and how to apply for a new extension.....	16
5.2.3 Your service and the electric grid	18
5.2.4 Information Requirements	19
CHAPTER 6 ENGINEERING	21
6.1 Introduction	21
6.2 Technical Information Collection.....	21
6.3 Distribution System Analysis	21

6.3.1	Site Visits to Collect Field Information	22
CHAPTER 7 COSTING		23
7.1	Cost Estimate to Provide Service	23
7.1.1	Ballpark estimates	23
7.1.2	Firm Cost Estimates	23
7.2	Proposals.....	23
7.2.1	Customer Proposal.....	23
7.2.2	Audit Process	24
7.3	Proposal Acceptance.....	25
CHAPTER 8 CONSTRUCTION		26
8.1	Design Approvals.....	26
8.2	Brushing and Line Construction.....	26
8.3	Metering and Connection.....	26
CHAPTER 9 COMMERCIAL TERMS		28
9.1	Principles	28
9.2	Understanding Your Obligations.....	28
9.2.1	Proposal Letter	28
9.2.2	Electric Service Agreement (ESA).....	29
9.2.3	Initial Term.....	29
9.2.4	Contract Minimums.....	29
9.3	Available Company Investment	30
9.3.1	Level of Investment	30
9.3.2	Residential Services	31
9.3.2.1	Determining the Amount of Investment	31
9.3.2.2	Sample Investment Calculation (2010 Investment Levels).....	31
9.3.3	General Service Services	32
9.3.3.1	Determining the Level of Investment	32
9.3.4	Farm Services	35
9.3.4.1	Determining the Amount of Investment	35
9.3.4.2	Sample Investment Calculations (2010 Investment Levels).....	35
9.3.5	Street and Sentinel Light Services	36
9.3.5.1	Determining the Amount of Investment.....	36
9.3.5.2	Sample Investment Calculations (2010 Investment Levels).....	36
9.4	Other Customer Distribution Costs	37
9.4.1	Allocation of Shared Extension Costs	38

9.4.2	System-Related Facilities versus Customer-Related Facilities	38
9.4.2.1	The Assignment of New Extension Costs to Customers	38
	Flowchart	40
	Allocation of System Costs	41
9.4.3	Cost Sharing	42
9.5	Ownership of Facilities.....	43
9.5.1	Transmission	43
9.5.2	Distribution.....	43
9.6	Backout Electric Service Agreement	44
9.6.1	Application	44
9.7	Facilities Charge	44
9.8	Dispute Resolution.....	45
	CHAPTER 10 CHANGES TO COMMERCIAL TERMS	46
10.1	Change in Distribution Contract Demand (Buy-downs & Buy-ups).....	46
10.1.1	Increase in Distribution Contract Demand (Buy-ups)	46
10.1.2	Decrease in Distribution Contract Demand (Buy-downs)	46
10.1.3	Change in Distribution Contract Demand Tables (under 500 kW).....	46
10.1.4	Change in Distribution Contract Demand (over 500 kW).....	47
10.2	Exit Provisions	49
10.2.1	Distribution.....	49
10.2.2	Transmission	49
	CHAPTER 11 BILLING	51
11.1	Delivery Charges	51
11.2	Demand Ratchet.....	52
11.3	Payment Terms.....	52
11.3.1	Billing	52
11.3.2	Contribution Payment	52
11.4	Sample Bills	53
11.5	Calculating Bills	53
11.6	Customer Access to Metering Data	53
11.6.1	Customer Usage Information.....	53
11.6.2	Request for Interval Meter	54
11.6.3	Read-Only Access to Metering Data	54
	CHAPTER 12 DISTRIBUTION GENERATING CUSTOMERS	55
12.1	Required Steps for Interconnection	55

12.1.1	Generator Interconnection Manual	55
12.1.2	Meter Data Manager Requirements for Distributed Generators	56
12.1.3	Terms & Conditions for Distribution Service Connections	56
12.1.4	Distribution Generator Application Form	57
12.1.5	Review Commercial Terms.....	57
12.2	Commercial Requirements	58
	APPENDIX A: SAMPLE BILLS	59
	Residential – D11	59
	Commercial – D21	60
	Large General Service – D31	61
	Oilfield Service – D41	62
	Farm Service – D56.....	63
	APPENDIX B: AUTHORIZATION AND RELEASE FORM.....	64
	APPENDIX C: DISTRIBUTION GENERATOR APPLICATION FORM	66
	APPENDIX D: MICRO-GENERATION APPLICATION FORM.....	68
	APPENDIX E: ELECTRIC SERVICE AGREEMENT FOR GENERATING CUSTOMERS..	70

Chapter 1 Introduction

This Guide was developed by ATCO Electric to help residential, commercial, farm, industrial, and oilfield customers who need electric service extended to a new or expanding site. It outlines the basic processes that ATCO Electric follows to design and build an extension, including the development of an Electric Service Agreement, which is intended to outline some of the customer's commercial rights and obligations. This Guide serves as a companion to the company's Terms and Conditions (T&Cs) for Distribution Service Connections (Wires). The T&Cs is a comprehensive document that defines the relationship between the company and the customer, and is a part of the customer's tariff. ATCO Electric's Terms and Conditions and this Guide can be accessed at ATCO Electric's website at: www.atcoelectric.com.

ATCO Electric is committed to following the practices outlined in this guide in order to provide a consistent framework for dealing with customers. We expect that these practices will cover the majority of new extensions built – although it is important to remember that any new extension can have significant differences in the way it affects the electric system and therefore on its costs. Sometimes it may be necessary to deviate from the Guide to meet the unique needs of a customer. As well, customers may encounter circumstances not specifically contemplated by these guidelines.

ATCO Electric will work with customers to resolve such situations to the mutual benefit of the customer involved and all affected parties. Customers have recourse to the Alberta Utilities Commission if they feel that a deviation from the guidelines has an adverse impact on them.

From time to time, practices outlined in this guide may periodically be updated to reflect changing circumstances and customer needs.

1.1 Basic steps to extend service

This guide reflects the basic steps ATCO Electric follows when a new extension is requested. These include:

- Collecting information for the initial application - Accurate and timely information about the customer's needs is essential.
- Engineering/costing - This includes analyzing not only the customer's immediate requirements, but also the impact on the power grid, and designing the required addition. This stage leads to a preliminary estimate of costs.
- Proposal development - This step involves developing a price proposal which would include the amount that ATCO Electric is willing to invest in the extension and the amount the customer is required to contribute. The customer's acceptance of this written proposal and the fulfillment of the financial obligations allow construction to proceed and will be deemed to constitute a commercial agreement between the customer and ATCO Electric for the provision of electric service for some services.
- Commercial arrangements - In this stage the customer and ATCO Electric finalize the payment terms and may sign an Electric Service Agreement when applicable.

- Construction – This involves completing detailed design, procuring labour and materials and building the extension. Preparation for construction may start at any time after the initial information-gathering stage, depending on the customer's requirements, the complexity of the project, and upon receipt of a written commitment to the project costs via payment of the customer's contribution, or part thereof (based on payment terms) and the commercial terms.

Chapter 2 ATCO Electric at a Glance

2.1 Welcome to ATCO Electric

ATCO Electric is part of the ATCO Group of companies with more than 80 years of experience meeting the growing needs of electric customers in Alberta. The Alberta-based ATCO Group is one of Canada's premier corporations. It is a worldwide organization of companies with 7,700 employees and assets of over \$9.8 billion.

ATCO Electric's core business is owning, operating and maintaining the system of power lines that delivers electric energy within its service area. The company is headquartered in Edmonton and has 38 local offices located in 11 districts throughout northern and east-central Alberta dedicated to providing safe, reliable service and fast emergency response.

Currently the company serves over 209,000 customers. These include single and multi-family dwellings, grocery stores, malls, petroleum and forestry companies, farms, small to mid-sized cities, and aboriginal communities, reserves and Metis settlements.

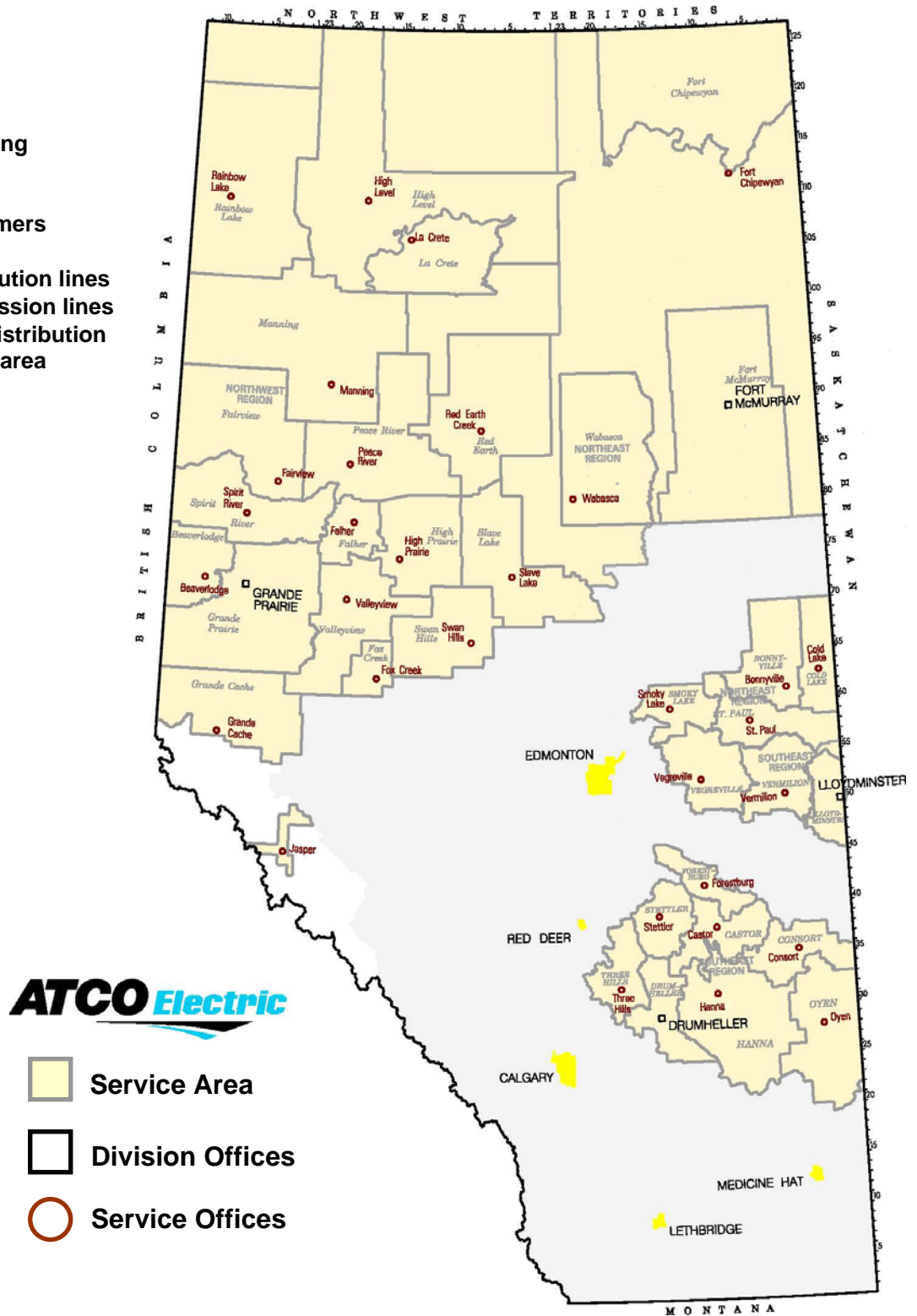
The company also plays a key role in the development of Alberta's industrial sector. Oilfield, industrial and commercial customers use over 80% of the total energy ATCO Electric delivers. ATCO Electric's Industrial Services staff located in Edmonton and Calgary are focused on meeting the particular needs of this customer group, and Customer Service Representatives located in the district offices provide services to all types of customers.

2.2 Service area map

The map below shows ATCO Electric's service area as regulated by the Alberta Utilities Commission pursuant to the Hydro and Electric Energy Act.

Our business is delivering electric energy:

- Over 209,000 customers
- 38 service offices
- 59,481 km of distribution lines
- 9,194 km of transmission lines
- 12,017 km of REA distribution lines in our service area



2.3 Regulatory

Alberta Utilities Commission (AUC) — The AUC is a quasi-judicial regulatory agency that adjudicates matters related to utilities in Alberta. It also oversees and decides upon matters such as transmission and distribution costs. The AUC's website is located at www.auc.ab.ca.

Chapter 3 Alberta's Electricity Marketplace

3.1 Roles and Responsibilities

Alberta's electricity industry is divided into three key segments: Generation, Transmission and Distribution. Generation of electricity is a deregulated market while Transmission and Distribution are regulated by the AUC. A brief overview of the roles and responsibilities of the various players in key segments of the industry follows.

(1) **Generation (or the production of energy)**

Generation is supplied by independent, non-regulated generators who sell their power through the Alberta Electric System Operator (AESO). The AESO is the market for energy traded in Alberta and declares the hourly price for electricity and maintains the balance between the supply and demand. The AESO and the utility companies in the province work together to manage system reliability and system support services (such as frequency and voltage control) and maintain the stable and reliable operation of the Alberta interconnected power system.

(2) **Delivery**

- ◆ **Transmission** - ATCO Electric owns and maintains the high-voltage lines (transmission facilities) within its service area, the operation of these facilities is done in conjunction with the Alberta Electric System Operator (AESO). The AESO ensures access to the transmission system is provided in an open, fair and non-discriminatory manner so that all power producers have access to the provincial grid on comparable terms.

Transmission facilities are defined by the Electric Utilities Act as facilities operating in excess of 25,000 volts. For a more descriptive definition, please refer to the Electric Utilities Act located on the Alberta Government's website at: <http://www.energy.gov.ab.ca/Electricity/688.asp>.

- ◆ **Distribution** - ATCO Electric, as a wire services provider and wire owner for customers in its service area, is responsible for the reliable and safe delivery of electricity to end-use customers. ATCO Electric enables retailers to have access to its electric distribution system so retailers can sell electricity directly to customers. ATCO Electric develops tariffs for the use of the system, makes arrangements for the use of transmission facilities with the AESO, looks after operations and maintenance of the distribution system and connects/disconnects customers. In order to facilitate transactions with retailers, ATCO Electric undertakes load settlement used in the settling of the exchange of electric energy.

A wire services provider does not necessarily need to own the distribution facilities - the owner can be a municipality or a Rural Electrification Association (REA) serving a particular service area. Owners can authorize another company to carry out the functions of a wire services provider or they can elect to do so themselves. In ATCO Electric's service area, most REA's have contracted with ATCO Electric to act as their wire services provider.

For a definition of an electric distribution system, refer to the Electric Utilities Act and for more information on the services that ATCO Electric provides customers, refer to *Roles, Relationships and Responsibilities Regulation, A.R. 169/2003* and other applicable regulations developed by Alberta Energy. These references can be accessed at: <http://www.energy.gov.ab.ca/Electricity/688.asp>

(3) Buying Energy

In the Alberta's electricity marketplace, end-use customers can buy electricity from retailers, or can carry out retailer functions (self-retail status) to obtain electricity services for their own use. Energy is delivered to end-use customers in ATCO Electric's service area via ATCO Electric's or an REA's electric distribution system. Retailers compete for customers and ensure that they have the appropriate arrangements with customers necessary to provide energy service. It is the retailer's responsibility to purchase electricity from the AESO and for arranging delivery of electricity to its customers. As mentioned above, customers who choose to self-retail can also purchase electricity from the AESO for their own use.

Retailers, self-retailers and any other party, such as agents, carrying out customer choice transactions with the company will first be required to fulfill a number of requirements to the satisfaction of ATCO Electric before the company provides Distribution Access Service to the retailer, self-retailer, or agent. These requirements are discussed in the Retailer Guide and the company's Terms and Conditions for Distribution Access Service located in ATCO Electric's website at: http://www.atcoelectric.com/B_tariffs/Terms_and_Conditions/Terms_and_Conditions.asp


(4) Agency

A retailer or self-retailer who chooses not to perform some or all of the customer choice transactions with the company may make an arrangement to have a third party act as its agent to perform functions such as retail billing and load settlement. Agents must ensure the appropriate contractual arrangements are made to recognize this unique business relationship and meet any applicable regulations and guidelines.

3.2 References and Readings

To get a thorough understanding of the industry and the Alberta electricity marketplace, below are suggested references and literature that will give all parties a comprehensive overview of the structure in the province and information on the company's tariffs.

(a) ATCO Electric Distribution Tariff

- ❑ *Distribution Tariff Price Schedules*
 - ❑ *Terms and Conditions for Distribution Access Service (Retailers)*
 - ❑ *Terms and Conditions for Distribution Service Connections (Wires)*
-  www.atcoelectric.com

(b) Retailer Guide

The Retailer Guide was developed by ATCO Electric to be used by retailers and self-retailers who have entered into a Retail Service Agreement with ATCO Electric for Distribution Access Service. This Retailer Guide also applies to any party who will be acting as an agent on behalf of the retailer(s) or self-retailer(s) for transactions including, but not limited to, retail billing and load settlement. The Retailer Guide is intended to provide an overview of ATCO Electric's business processes and includes descriptions of common customer choice transactions in order to effectively deal with the company or an REA.

 www.atcoelectric.com

(c) Power Producers

ATCO Electric has put together information to assist with the interconnection of generators and micro generators to ATCO Electric's distribution system.

 www.atcoelectric.com

(d) Government Legislation and Regulations

- Hydro and Electric Energy Act*
- Electric Utilities Act*
- Roles, Relationships and Responsibilities Regulation*
- Distribution Tariff Regulation*
- Other applicable regulations (final or draft form)*

 <http://www.energy.gov.ab.ca/Electricity/688.asp>

(e) Alberta Electric System Operator

 www.aeso.ca

Chapter 4 Basic Concepts

ATCO Electric is the owner of the distribution wires within its service area, and is responsible for the safe and reliable delivery of electricity to customers. ATCO Electric charges the retailers for the transmission and distribution of their electricity and the retailers in turn pass this cost to the customers they sell the electricity to.

4.1 Energy & Demand

The amount a customer pays for electricity is affected by two major factors. The first is the amount of energy consumed, and the second is the demand placed on the system, which is the rate at which electricity is consumed. Residential rates do not have a separate component to charge a customer for the demand, only energy is measured.

For commercial, industrial, oilfield and farm customers (with a demand meter), both energy and demand are measured by the electric meter at the facility. The energy indicator, which measures in kilowatt-hours (kW.h), indicates how much electricity has been consumed over a period of time. The demand indicator measures both the current demand (the rate of electricity consumption at that particular moment) and peak demand, the highest rate of electricity consumption since the meter was reset. Peak demand is the basis of demand charges.

You are charged for demand because the rate at which electricity is consumed determines the system capacity required to serve you. Your demand is based on whether you consume a small amount at a steady pace or widely varying amounts in different time periods.

For example, two customers that consume 26,000 kilowatt-hours (kW.h) could place completely different loads on the system depending on when energy is consumed. One customer may consume 26,000 kW.h steadily over the space of 1 month. The average demand of this customer would be:

$$\frac{26,000kW.h}{744hours} = 34.95kW$$

The second customer may consume the entire 26,000 kW.h in the space of 15 days (360 hours) and use no electricity during the remaining days of the month. This customer's average demand would be:

$$\frac{26,000kW.h}{360hours} = 72.2kW$$

Thus, this customer causes much higher costs for the electric system than the first customer, even though they both consume the same amount of energy.

4.2 Load Factor

The concept of load factor is based on the reality that no customer uses exactly the same amount of power all the time. A customer's demand fluctuates as appliances and equipment are turned off or on, or as shifts come and go and as production goes up and down.

Load factor reflects a customer's average demand for electricity and is stated as a percentage. It compares the energy used in a given period, divided by the energy that would have been used if the customer drew their peak demand for that whole period.

For example, a customer whose maximum demand in a particular month is 10 MW and has a load factor of 80 per cent. This means, on average, they drew 8 MW, or 80 per cent of his peak power demand.

Load factor measures how effectively customers use the capacity for which they are being charged. A high load factor – closer to 100 per cent – means they are setting a steady power demand and do not impose high costs for capacity on the electrical system relative to the energy used. A low load factor means they are occasionally setting a high power demand, thereby imposing higher costs on the electrical system relative to the energy being used.

4.3 Power Factor

Power factor can be thought of as a measure of “wasted” current. Whenever power is supplied to an inductive load (such as an electric motor or transformer), some of that power is used to create a magnetic field necessary to operate the equipment. The “reactive” power (measured in kV.A rather than kW) is in effect wasted, as it does not produce any direct or useful work.

ATCO Electric considers a 90 per cent power factor to be an acceptable limit. When a customer's power factor drops below 90 per cent, a penalty charge may be imposed per kV.A of apparent power below the 90 per cent threshold, or the customer may be required to install corrective equipment.

Typically, a low power factor indicates excessive circuit inductance. Usually the problem can be corrected by adding a capacitor to the customer's system.

Chapter 5 Application for New or Changes to Service

5.1 Types of Services

Individual customers use the electric system differently, and this results in ATCO Electric incurring costs differently in order to deliver electricity to them. For this reason, ATCO Electric has developed several price schedules to meet the various needs of its customers. The most common price schedules are listed and described below.

5.1.1 Residential Service (Price Schedule D11)

This type of service is available for single and separate households through a single-phase service at secondary voltage (120/240V) through a single meter. Price Schedule D11 is only applied to residential customers and is not applicable for commercial or industrial use.

5.1.2 Standard Small General Service (Price Schedule D21)

This type of service is available for customers whose service is below 500 kW. Price Schedule D21 is applicable to typical commercial customers such as a store, restaurant or a warehouse. The shared facilities of condominium units may also fall under this type of service.

5.1.3 Large General / Industrial Service (Price Schedule D31)

Price Schedule D31 type of service is similar to D21, but is usually applied to much larger loads (greater than 500 kW). Typical customers may be a gas plant, a large store such as a big box store, or oilsands facilities, etc.

5.1.4 Large General / Industrial Service (Price Schedule T31)

This type of service is similar to D31, but is directly connected to a transmission substation and use little or no distribution facilities owned by ATCO Electric.

5.1.5 Small Oilfield and Pumping Power Service (Price Schedule D41)

This rate is available only for customers with production energy requirements in the petroleum and natural gas industries including related operations with yearly average operating demand of less than 75 kilowatts.

5.1.6 REA Farm Service (Price Schedule D51, D52)

This rate is available only for farming operations which are connected to a Rural Electrification Association's (REA) distribution system.

5.1.7 Company Farm Service (Price Schedule D56)

This rate is available only for farming operations which are connected to ATCO Electric's distribution system.

5.1.8 Street Lighting Service (Price Schedule D61)

This rate is available only for streetlights and does not include private lighting.

5.1.9 Private Lighting Service (Price Schedule D63)

This rate is available only for sentinel lighting on private or municipal property such as yard lights, driveways, parking lots, or off-street lighting such as parks, skating rinks, and security to name a few.

5.2 New Additions or Changes to Services

5.2.1 The importance of working together

Working together is essential whenever you are considering an addition, an upgrade or a removal of your service. Application for a new service or changes to an existing service should be made as far in advance as possible. Careful attention is paid when designing a customer's service extension. Some important elements must be considered when a customer makes an initial request. They are as follows:

- In order for ATCO Electric to meet your in-service date, lead time is required for the various activities that go into extending service, and some aspects (such as approvals for right-of-way) are not always within ATCO Electric's control. The sooner we know about your needs, the sooner we can get working on this process.
- To arrive at the most effective/lowest cost combination of system improvements -- not just for now, but to meet your future needs, the lowest cost option for your present needs may not be the most economic when you expand your site.
- Because the electric system is very sensitive to variations in load and supply, any change in service must be carefully designed to maintain service to all customers and ensure it is the best design for *all* customers affected by your addition.

When you reduce or remove your service, ATCO Electric can assist with the orderly and economic planning of the change. Once more, it is important to contact us early in the planning stages of reducing load or for the removal of facilities.

5.2.2 When and how to apply for a new extension

Contact ATCO Electric during the early stages of planning for your development, prior to ordering your equipment.

Residential, farms and commercial customers should contact the Residential and Commercial Customers Call Centre at the following numbers to apply for a new service.

Residential and Commercial Customers Call Centre

Phone: 1-800-668-2248

Fax: (780) 420-7723

Industrial customers should contact their account representative or call the Industrial Customer Service Centre at the numbers below. Or for more details, including a contact list of the Industrial Services Group and an online application form, visit the Industrial Services website at:

http://atcoelectric.com/B_industrial/Default.asp

Industrial and Oilfield Call Centre

Phone: 1-888-789-8880

Fax: (780) 420-7723

Or,

Industrial Services

Edmonton Phone: (780) 420-3468

Edmonton Fax: (780) 420-7222

Calgary Phone: (403) 245-7397

Calgary Fax: (403) 245-7265

For details on the application process for Micro-generation, customers should refer to the Micro-generation home page located in:

http://www.atcoelectric.com/Our_services/Our_System/Micro_Generation/Micro_Generation.asp

For details on the application process for distribution generation, customers should refer to the Power Producers web page located in:

http://www.atcoelectric.com/B_PowerProd/Default.asp

5.2.3 Your service and the electric grid

In order to deliver the energy needed, the electric grid must have the necessary capacity available. Depending on the size and location of your project, a variety of factors must be considered to determine whether the system is capable of delivering energy. They include:

- what facilities are available at or near your project's site,
- what distribution/transmission capacity is available in the area,
- timing of any proposed upgrades to the distribution and transmission system, and
- what impact will your equipment have on the system.

Small individual services such as residential, commercial or farm services usually have a minimal effect on the electric grid because their loads are small compared to the capacity of the grid. However, as loads get larger they have a greater impact on both distribution (lower-voltage local delivery) and transmission (high-voltage bulk delivery).

Distribution impacts could range from the need to rebuild existing power lines to adding power lines because the existing system does not have sufficient capacity for the service. Rebuilding requires lead time to arrange for outages or provide alternate service for customers already served by that line.

New distribution lines also require lead times to arrange with local authorities¹ for right-of-way approvals, and with other utilities (such as telecommunications or gas). This can be a lengthy process if the authority has concerns about the proposed route. Moreover if right-of-way approvals cannot be obtained, alternate routes need to be found.

If a new extension interconnects with a customer facility that has a generator, an operating agreement will be required. The operating agreement defines the roles and responsibilities associated with operating the interconnection and is required to ensure the safety of both the customer's and ATCO Electric's facilities and equipment. Please refer to Chapter 12 for information on distribution connected generators.

Transmission impacts could range from notifying the AESO² that ATCO Electric must increase its contract for capacity at the nearest point of delivery, to the need for new transmission facilities. New transmission facilities require the greatest lead time. For example, some equipment such as transmission transformers can take up to one year to deliver. As well, the transmission regulatory approval and land acquisition process is more rigorous and therefore longer.

¹ Local authority is used here in the land right approval sense. Examples of local authorities are – City, Town, Village, Municipal District, Crown Land, Band Council, Metis Council, Rural Electric Association, Department of Transportation, Railway crossing, Navigable water crossing, private land owners.

² The Alberta Electric System Operator (AESO) is responsible for ensuring that system access is available for the Alberta interconnected transmission system.

In the case of isolated generation (i.e., where there is no connection with the provincial transmission system), it is necessary to check impacts to existing generation capacity and the timing of additions at that location. If new generation is required, the costs and benefits of alternatives (distribution and transmission) must be explored and the optimal one chosen.

Services that are remote (far from existing supply) generally involve evaluation of various alternatives: isolated generation, transmission and distribution.

In addition, for any new addition, there may be a need to determine its impact on power quality standards. If this impact is large, conditions may be placed on the service. Power quality checking generally involves at least one of the following kinds of analysis: harmonic analysis, motor start simulations, and fault current analysis.

5.2.4 Information Requirements

Some of the key information ATCO Electric requires about your proposed project includes:

- Developers legal name, mailing address and contact information;
- Requested in-service date;
- Legal Land Location of the site(s);
- Site plan/ plot plans for firm price requests;
- Load requirements / equipment characteristics at each site (for large industrial and general service type loads only):
 - Protection needs (ground resistors, inrush, etc)
 - Transformer needs.
- On-site primary/secondary lines or service needs.

The application should also identify:

- Any non-standard supply requests different from those identified in the Terms and Conditions for Distribution Service Connections, Schedule A, Standard Supply Specifications³. For industrial customers the intended ownership of new electrical equipment (such as transformers) should be clarified.
- Any non-standard metering requests different than those identified in the Customer Metering and Services Manual.³ Equipment ownership should be clarified.
- Any need to consider back-up transformers or underground vs. overhead facilities for local requirements, reliability or safety. These will be discussed on a case-by-case basis with the customer.
- Any special sensitivities regarding outage duration or system disturbances. These will be discussed with the customer so alternatives can be explored.
- Any known increases or decreases in load over the life of the facility (known as staging).

³ Available on ATCO Electric's web site at www.atcoelectric.com

Depending on the complexity of your project, there are instances when more or less data is required. This topic is covered in more detail in the Engineering and Costing sections (Chapters 6 and 7).

It is important for the customer to provide sufficient lead time to perform the work necessary to provide a price and also provide a service connection. The customer should contact ATCO Electric as early as possible in the project planning, evaluation stage or conception stage. If the notice period is too short to provide a proper estimate, or we do not have enough information, the customer will be notified at the time the request is made or shortly thereafter.

ATCO Electric will not share the customer's information on any application for design with affiliate companies unless permitted to do so by the customer.

Chapter 6 Engineering

6.1 Introduction

The engineering and design phase includes analyzing not only the customer's immediate requirements, but also the impact on the power grid. It leads to a preliminary estimate of costs. ATCO Electric will work closely with the customer to confirm information and explore options.

6.2 Technical Information Collection

The first step in the engineering process is to gather all the necessary information to design an extension that meets all the customer's needs.

Typical steps in this process include:

- Discussions between ATCO Electric and the customer's technical liaison to provide or clarify technical information regarding the site(s), load characteristics, motor starting characteristics, special needs, etc.
- Based on this information, ATCO Electric models the distribution system and performs distribution system analysis, chooses line routes, identifies equipment needs, determines impacts, and designs/estimates accordingly.
- If this type of information is not known, or is not confirmed at the time of the estimate, the estimate will be of the ballpark type with assumptions and "subject to" information provided at the time of the estimate. Waiting for information, or changes to information can cause delays. (For a full discussion of "firm" vs. "ballpark" estimates and proposals, see Costing, Section 7.1)

6.3 Distribution System Analysis

Typically, for motor loads greater than 15 HP on single-phase systems and motor loads greater than 75 HP on three-phase systems, ATCO Electric develops a model of the distribution system on a computer program using the load and load characteristics provided by the customer and field routing information. Distribution system parameters are reviewed and compared to standard voltage flicker and steady state operating conditions, and with harmonic standards identified in our engineering and operating standards. Equipment specifications and system additions or changes are determined to ensure that motors will start properly, that steady-state voltage and current are within limits, that fault current is acceptable and that harmonics are within acceptable limits.

The information and load equipment characteristics provided by the customer or the technical liaison is used to model the system. If pertinent information is missing or has not been confirmed, then system impacts can vary greatly and this work can take longer than anticipated. If information is missing, ATCO Electric cannot provide a firm estimate, and even a ballpark estimate will be difficult to provide.

Most customers have only one power line and transformer serving them. If that power line or transformer should fail, repair time will be required. In some cases where the load is large or the power line is long (or remote), this could cause

necessary repair times to be longer than the customer can accept. If your service has special sensitivities regarding outage duration, please discuss them with us so alternatives can be explored.

Momentary outages occur as a result of, among other things, tree and lightning contact with lines. ATCO Electric installs equipment on facilities to protect public safety, minimize damage to equipment and allow us to restore service as quickly as possible. Although it is not possible to guarantee that momentary outages will be eliminated, we can help you in determining the frequency probability and share our experience regarding what others have done to minimize similar impacts.

6.3.1 Site Visits to Collect Field Information

Depending on the type of proposal the customer has requested, the site visit can take one of three forms:

- For ballpark proposals, a drive-by site visit or a general review using an ATCO Electric map will occur.
- For firm proposals, depending on the size and complexity of the project, an individual or a team will meet with the customer's field representative on site. They will discuss and verify information, including:
 - Site layout, access, pipeline/flow line routes, power line and power equipment locations.
 - Any construction conflicts between the customer's facility and ATCO Electric's facility.
 - Line routing considerations, including environmental impacts, fire hazards, all safety impacts, operating and maintenance impacts, third party impacts (pipeline, telephone, landowners, etc), design and capital cost impacts.
- If the customer's field representative cannot meet on site, our Customer or Industrial Services representatives will attempt to get in touch with the customer's contact person. In this event, a ballpark proposal may be provided until a site visit can be arranged and a firm proposal can be drafted.

Chapter 7 Costing

7.1 Cost Estimate to Provide Service

ATCO Electric's first step in developing a complete proposal for the customer is to develop an estimate of the project's costs. This estimate includes the cost to provide facilities needed to deliver electrical energy from the distribution system, plus any distribution system additions or changes needed to support the new load addition and protect other customers.

The component costs include design, obtaining third party approvals, providing and installing line and substation material, brushing rights of way, acquiring land for rights of way, installing metering and connecting the service, etc. Assumptions and subject-to costs are identified where necessary.

Estimates take one of two basic forms:

7.1.1 Ballpark estimates

A ballpark cost estimate is developed by applying unit estimating tools to general field information or map information and general knowledge of the area in question. The estimate's accuracy depends on the assumptions and is subject to conditions, which are normally indicated and included in the cost estimate. ATCO Electric will use all reasonable efforts to identify all cost impacts.

7.1.2 Firm Cost Estimates

A firm cost includes confirmed cost impacts and distribution system additions or changes needed to support the load increase. It is the cost to provide the physical plant or facilities needed to deliver electrical energy.

In preparing a project proposal, ATCO Electric reviews possible alternatives for providing service, and selects the least-cost alternative, considering the surrounding circumstances and the overall impacts on the system. The least cost estimate is generally presented to the customer, unless the customer has requested otherwise.

7.2 Proposals

The next step is to develop a proposal for the customer, based on the cost estimate and including the commercial terms and rates that the customer would pay.

7.2.1 Customer Proposal

A customer proposal is a binding offer that specifies the commercial terms and technical specifications under which ATCO Electric will build a new or upgraded connection and provide ongoing electric service. It identifies the price schedule, company investment, the customer's required contribution, and subject-to provisions. Depending on the type and complexity of the project, it also includes additional information such as harmonic specifications, motor starting and flicker limits, protection specifications, etc.

In order to provide a proposal, ATCO Electric requires detailed information on the customer's service requirements, as described under Chapter 5 *Application for New or Changes to Service* of this guide. The minimum information requirements apply to all requested services, while larger or more complex service requests may have additional requirements. Your ATCO Electric representative will inform you of any additional information requirements.

ATCO Electric may be unable to provide a customer proposal in circumstances where we believe we have insufficient information to adequately qualify the basis of the cost estimate. In these cases, we will work with the customer to collect the information required, until sufficient information is available to provide a proposal

The company's Terms and Conditions, as approved by the Alberta Utilities Commission, apply to every service and every customer, even if they are not explicitly stated in the proposal. A firm price proposal cannot waive or alter any part of the Terms and Conditions unless such agreement is first filed with and approved by the Commission. A copy of ATCO Electric's Terms and Conditions are available on the company's website at www.atcoelectric.com.

The minimum information in a formal (written) customer proposal includes:

Technical Specifications

- Length of line to be constructed to serve the customer's site
- Transformer size
- Primary and secondary supply voltage
- Other system additions or equipment necessary to serve the load

Commercial Terms

- Project cost estimate
- Initial term of the contract
- Minimum contract demand
- Capital contribution
- Applicable price schedule

Additional Conditions

- Requirements to accommodate equipment that may produce harmonics
- The time period for which the proposal remains valid (typically 60 days)
- Provision to revise the proposal due to changes in power line routing beyond ATCO Electric's reasonable control (e.g. third-party interests, land acquisition constraints, etc.)
- An estimate of the lead time required to construct the service once ATCO Electric receives the required information from ATCO field and engineering staff and the customer has given acceptance of the proposal.

7.2.2 Audit Process

At the outset of the project if a customer's estimated work-order is \$250,000 or more, the customer initially has the choice of either

- (1) paying the actual work-order closeout costs, or
- (2) paying the firm price proposal.

This is done at the request of the customer. If a customer has chosen to pay based on actual work-order closeout costs and these costs exceed the estimate by more than 10%, ATCO Electric will provide the customer with a cost breakdown and a detailed variance report for each category that contributed to the cost overrun.

The breakdown will include the following category totals (including allocated overhead):

- Material
- Labour, truck, and expense
- Brushing, right-of-way, and land costs
- Other

7.3 Proposal Acceptance

The proposal is sent to the customer by mail, e-mail or fax and is usually valid for 60 days from the date of the letter. Acceptance of the firm proposal in writing is required before construction of the service will proceed. In accepting the written proposal the customer confirms any options or alternatives selected, and allows construction to proceed. For residential, small general service, and farm service the acceptance of the proposal will be deemed to constitute a commercial agreement between the customer and ATCO Electric for the provision of electric service.

It is critical for customers to remember the necessary lead time for providing electric service. Lead time is needed to design, survey the line, obtain easements and approvals, procure labour and material, brush and build the facility, connect metering and energize the service. ATCO Electric does the utmost to meet the required in-service dates for customers, although some elements – notably obtaining necessary approvals – are not within our control.

If a customer chooses to cancel their project and not proceed, after a proposal has been accepted, a customer may be expected to cover costs incurred on their behalf to-date.

Chapter 8 Construction

8.1 Design Approvals

Once the customer has accepted the proposal, detailed design work is carried out. ATCO Electric's engineering survey group will begin civil line design, staking line structures, preparation of formal crown land drawings, profiling special crossings, completing environmental field data collection, preparing construction drawings, etc. as required.

If required, private land and crown land easement drawings, along with environmental field reports, are completed. Necessary land and brushing easements are obtained. Other approvals and notifications are looked after, including:

- third-party land interests (pipeline, railway, coast guard, Alberta Transportation and Utilities, trappers, leases, etc),
- Aboriginal/First Nations approvals,
- REA notifications,
- notification letters and approvals to regulatory bodies (such as the AUC), and
- other utility notifications.

Major steps in completing the engineering work include:

- Electrical design work is carried out. Technical information is provided to the customer when requested.
- Tender packages are prepared for brushing and line construction bidders.
- Material lists are compiled, construction drawings completed and, easement conditions and approvals are assembled.
- The job plan is completed.

8.2 Brushing and Line Construction

Brushing and construction personnel review the project scope and packages and follow up on all easement, brushing and approval conditions. Contact may occur with the customer's field representatives. Material is procured and outages and switching is coordinated. Labour requirements are confirmed and scheduled. Underground facilities are located prior to start of line construction. Government on-site notifications are made and permits obtained. The right-of-way is cleared and the power line constructed.

8.3 Metering and Connection

In order for the meter to be connected and the service energized by ATCO Electric, the customer must be enrolled with a retailer, have a valid electrical permit or accreditation for the facilities installed on their side of the meter, and ATCO Electric must carry out a customer secondary wires inspection. For information on selecting a retailer, visit: <http://www.uca.gov.ab.ca> and refer to the Customer Metering and Service Manual in ATCO Electric's website (<http://www.atcoelectric.com>) for information on connection requirements. In addition, the site must be enrolled with a retailer. Billing will be initiated once the meter is installed and the service has been

energized. If the service has not been energized within 30 days after the in-service date, billing will be initiated according to contract terms (this is not applicable to developers of subdivisions or multiple dwelling residences).

Chapter 9 Commercial Terms

9.1 Principles

For residential, small general service, and farm customers, acceptance of the Proposal Letter is a binding agreement to take service and conform to the commercial terms and ATCO Electric's Terms and Conditions.

For large industrial, oilfield and some commercial services, the accepted proposal in turn becomes the basis for an Electric Service Agreement (ESA), which is negotiated between the customer and ATCO Electric on the basis of the policies and tariff approved by the Alberta Utilities Commission (AUC). This finalizes the commercial terms that govern how charges are applied for service. This commercial agreement will incorporate the AUC approved Terms and Conditions for Distribution Service Connections (DSC T&Cs) by reference.

The cost of extending service to a new site depends on factors like size and complexity of the extension. A residential service, for example, requires less equipment and engineering work than a large industrial service which may have more complex technical requirements. ATCO Electric generally applies an investment that is based on the Maximum Investment Levels stated in Schedule B of the DSC T&Cs approved by the AUC at the time the proposal is created to offset the new extension costs. ATCO Electric's investment is capped to the lesser of the investment per Schedule B or the estimated new extension cost. If the estimated cost exceeds ATCO Electric's investment, the customer will be required to pay a contribution to cover the difference.

ATCO Electric does not apply its investment to developers of commercial or industrial subdivisions because of the unique load size and required facilities that general service and industrial customers can have. Investment is applied to the end-use customers as required. However, for residential subdivisions or apartment buildings, where the facilities are similar and the investment level is common to each lot or apartment suite, ATCO Electric will provide its investment to the developer.

These principles are explained in more detail in this guide.

9.2 Understanding Your Obligations

9.2.1 Proposal Letter

For residential, small commercial and farm customers, acceptance of the Proposal Letter accompanied with payment of the customer's contribution towards the estimated project costs is a binding agreement to take service and conform to the commercial terms and ATCO Electric's Terms and Conditions. The signing of an Electric Service Agreement (ESA) in addition to this is not required.

9.2.2 Electric Service Agreement (ESA)

For large commercial, industrial, and oilfield customers an Electric Service Agreement (ESA) is required. The ESA is used as formal binding agreement to take service and obligates the parties to the commercial terms stated and ATCO Electric's Terms and Condition for Distribution Service Connections.

After acceptance of ATCO Electric's proposal has been received, along with payment of the customer's contribution towards the estimated project costs, ATCO Electric will provide its standard ESA for signing. Understanding what rights and obligations that both parties have will help you make informed decisions around how to properly manage your electrical service.

When a new customer takes over the operation of an existing service, the existing customer's ESA is transferable whereby the new customer is subject to the terms therein, along with the billing and demand history. The contractual arrangements will remain in place until a new ESA has been drawn up between ATCO Electric and the new customer.

A sample of ATCO Electric's ESA is provided in Schedule D of the Terms and Conditions for Distribution Service Connections.

9.2.3 Initial Term

The Initial Term sets out the period in which the customer must meet certain obligations and receive certain benefits. Customers and ATCO Electric must mutually agree upon the Initial Term that suits the service needs. This period is typically one to five years; however, an initial term of greater than 5 years can be negotiated so that a customer can continue to receive the benefits provided by the Initial Term. These include contribution refunds, in the event that the customer's load increases, and cost sharing, in the event that additional customers connect to the extension (refer to 9.4.3 for further information on cost sharing). Increasing the Initial Term beyond the standard 5 years also extends the obligation of the customer to pay ATCO Electric's remaining investment in the extension that has not been recovered through rates, in the event that the customer will be shutting down their facilities (exiting).

It is important to note that even though the Initial Term has a set period (e.g. five years), if the customer continues to take service beyond the initial term, the Electric Service Agreement remains in effect from year to year until service is no longer required. A customer is always bound to the terms and conditions of service until the facilities are no longer required.

9.2.4 Contract Minimums

The company invests a certain amount of money in extending the supply of electricity to each new customer. ATCO Electric incurs fixed costs related to the distribution facilities required to serve each new load. Rates are designed, on average, to recover the investment over a long period of time. If a customer's projected demand level does not materialize; these fixed costs still need to be recovered.

To avoid transferring all of these costs to other customers through higher rates, the Distribution Contract Demand (DCD) is set so that a specific portion of the related costs of the customer's dedicated facilities are recovered while the service is energized even if the operating demand falls below the DCD. If the customer has requested service to be disconnected but still requires the local distribution facilities to remain in place for possible future need, the customer will be responsible to pay an idle service charge (Option F of the Distribution Tariff), which is designed to recover the fixed costs of providing these services.

9.3 Available Company Investment

9.3.1 Level of Investment

Once the costs of extending facilities have been determined, ATCO Electric will apply an investment to offset the construction costs. The general philosophy is that, up to some reasonable limit, the cost of a new extension should be included with the other costs of the electric system and recovered through rates charged to all customers. This "reasonable limit" reflects the maximum investment level that ATCO Electric is permitted to contribute towards your project. This level is usually expressed in dollars per kilowatt or dollars per service. Refer to Schedule B of the Terms and Conditions for Distribution Service Connections for the current Available Maximum Investment levels provided by ATCO Electric.

ATCO Electric expects the recovery of its investment in new extensions to occur over a certain time period, and is called the investment term. Typically, this time period for a residential customer or a farm is based on a service life of 30 years. For a commercial or an industrial project it assumes that the customer site will exist and operate for 25 years – the average life for these types of facilities. For oilfield projects, the investment term assumes a 15-year life span.

ATCO Electric assesses the level of risk at the outset of the project based on information received from the customer and other factors. If it is determined that the revenue from a particular customer will not fully materialize because there is a high probability that the customer may request to discontinue service and exit the system before the investment recovery period is complete, ATCO Electric will reduce its investment in the facilities, thereby reducing the investment term, by applying a portion of the Available Maximum Investment Level that reflects the predicted life of the customer (refer to the DSC T&Cs, Schedule B, paragraph 2). It is important for ATCO Electric to undertake this exercise to ensure other customers are not left to bear the un-recovered capital invested in the extension when this customer shuts down. An example of this would be a construction or oilfield camp that would have a limited life.

If ATCO Electric withholds available company investment from a customer, the company will provide the customer a written explanation outlining:

- (a) the reasons for withholding the investment; and
- (b) the Customer's right to appeal the company's decision to the AUC.

If the project cost is greater than ATCO Electric's investment, a contribution from the customer will be required. This is typically an up-front payment made at the time of providing the signed Proposal Letter.

For services that require new transmission facilities, ATCO Electric will generally pass on the AESO's costs directly to the customer(s) causing the new facilities.

9.3.2 Residential Services

9.3.2.1 Determining the Amount of Investment

Residential customers receive a fixed investment on a per site basis that does not have a demand obligation in their rate.

9.3.2.2 Sample Investment Calculation (2010 Investment Levels)

Case 1: Cost of extension is less than available company investment

If ATCO Electric's estimated costs of extending facilities are less than the available company investment for the type of service provided, the customer will not be required to make any contribution.

Example 1: Residential

Price Schedule.....	=	D11
Available company investment level per single family dwelling =		\$1,320
Capital cost of building facilities.....	=	\$1,000
Customer Contribution.....	=	\$0

Case 2: Cost of extension is more than available company investment

If the company's estimated costs of extending facilities are more than the available company investment for the type of service provided, the customer will be required to make a contribution.

Example 2: Residential

Price Schedule.....	=	D11
Available company investment level per family dwelling =		\$1,320
Capital cost of building facilities.....	=	\$6,000
Required Customer Contribution (\$6,000 - \$1,320).....	=	\$4,680

9.3.3 General Service Services

This section applies to commercial, industrial and oilfield services only

9.3.3.1 Determining the Level of Investment

Commercial, industrial, and oilfield services receive a variable investment (per kW) that varies with the demand that the facilities design is based on. The investment is usually made in the end-use customer's facilities by establishing a DCD. The DCD is the customer's obligation to ATCO Electric so that money invested in the facilities that were built to serve the requirements is recovered. There can be two different contract demands associated with a customer's obligations. They are:

- (1) Distribution Contract Demand (DCD), and
- (2) Transmission Contract Demand (TCD).

9.3.3.1.1 Determining the Level of Distribution Contract Demand

DCD is used as the basis for determining how much ATCO Electric will invest in a new extension project. It is based on the demand for capacity that the project will place on the electric system and establishes the investment in customer related distribution facilities. For a more complete description of the concept of "demand", please refer to Chapter 4.1 of this guide.

In most cases, a mutually agreed-on level of contract demand is determined through discussions between ATCO Electric and the customer. However, the contract demand must realistically approximate the demands the project puts on the electric system, and ATCO Electric reserves the right to determine the appropriate contract level. The DCD must never exceed the facilities maximum load requirements.

Factors that can be considered in determining the appropriate contract demand level and the corresponding ATCO Electric investment are:

- Type of service (e.g. grocery store, pump jack);
- Life of the service;
- Operating loads of similar facilities;
- Coincidence factor of the motors/equipment;
- Number of motors and redundancy;
- HP ratings of the motors;
- Customer's load forecast;
- Short - and long-term plans for the facility (increase or reduction in operating load) and
- Level of risk associated with the project.

The two methods generally used for evaluating the appropriate contract demand level are:

(1) Expected Operating Load Method: Occasionally, we can predict the operating load at the facility with confidence, based on its expected mode of operation. In this instance, ATCO Electric multiplies the customer's expected operating load by some percentage (typically 80%), depending on which of the factors above are appropriate.

(2) Connected Horsepower Method: Sum the total connected horsepower, convert to kW (x .746), and multiply by 50-80% depending on the factors considered above.

Upon request, ATCO Electric may provide multiple DCD level options and terms for a customer to consider.

Customers that forecast changes in operating load over the life of the facility can reflect those changes in the contract demand. ATCO Electric will consider staged contracts when determining the investment level thereby reducing the likelihood that a contribution refund or contract buy-down will be required at a later date. When contracts are staged, ATCO Electric calculates the investment level based on the present value of the future capital revenue stream resulting from the increase or decrease in the DCD over the life of the service and will reflect the change in the customer's contract.

Due to the administrative complexities in calculating staged investments ATCO Electric prefers that this type of investment does not exceed two years, and that future changes in DCD be determined at the time of the actual requirement.

For example, a customer with a forecast operating load as shown below and an expected facility life of 25 years would attract the following investment:

<u>Operating load</u>	<u>Years</u>
100 kW	0 – 5
250 kW	6 – 25

Calculation:

\$831 / kW ⁴ x 100 kW=	\$ 83,100
\$769 / kW ⁵ x 150 kW=	\$115,350
Available Investment	\$198,450

ATCO Electric will not generally consider staged contracts if the DCD increases dramatically near the end of the facilities expected life.

⁴ Based on current available company investment for service under D31.

⁵ Based on the present value of the future revenue resulting from the increase in the contract demand over the life of the service.

9.3.3.1.2 Determining the Level of Transmission Contract Demand

A customer may also have a Transmission Contract Demand (TCD) if transmission facility costs are incurred by providing the extension. TCD is the company's contribution to the AESO in customer related transmission facilities. In other words, if a single customer is served from one transmission point-of-delivery (POD), the TCD will generally equal the contract demand in ATCO Electric's POD contract with the AESO. Otherwise, it will generally be set to equal any increase in the POD contract demand that results from the customer's addition.

9.3.3.1.3 Sample Investment Calculations (2010 Investment Levels)

Example 1: Commercial

Price Schedule.....	=	D21
Expected operating demand.....	=	10 kW
Possible DCD (10 kW X 80%).....	=	8 kW
Available company investment level ⁶	=	\$1,381/kW
Available company investment level (\$1,381/kW x 8 kW)....	=	\$11,048
Capital cost of building facilities.....	=	\$8,286

Since the capital cost is less than the available maximum company investment, the customer will not be required to make any contribution, and assuming it would have a life of 25 years it would have a DCD of:

$$\$8,286 \div \$1,381 \text{ per kW} = \underline{6 \text{ kW}}$$

Example 2: Industrial

Price Schedule.....	=	D31
Expected operating demand.....	=	200 kW
Negotiated DCD (200 kW X 80%).....	=	160 kW
Available company investment level.....	=	\$831/kW
(Customer is willing to commit to a 5 year initial term)		
Available company investment level (\$831/kW x 160 kW).....	=	\$132,960
Capital cost of building facilities.....	=	\$250,000
Required Customer Contribution (\$250,000 - \$132,960).....	=	\$117,040

In this example, the customer will be required to make a contribution of \$132,960 and would be required to commit to a 5-year initial term at a DCD of:

$$\$132,960 \div \$831 \text{ per kW} = \underline{160 \text{ kW}}$$

⁶ Assumes a Service Life of 25 years.

9.3.4 Farm Services

This section applies to company farms only as ATCO Electric does not invest in REA farms. Please contact your REA representative for further information.

9.3.4.1 Determining the Amount of Investment

The available investment for a farm is based on their breaker size, for loads less than 25 kV.A. For farm loads greater than 25 kV.A, ATCO Electric would apply a similar approach to a general services load, as described in Section 9.3.3.

9.3.4.2 Sample Investment Calculations (2010 Investment Levels)

Example 1: Farm

Price Schedule.....=	D56
Breaker Size..... =	7.5 kV.A
Available company investment level..... =	\$1,524/kV.A
Available company investment level (\$1,524/kV.A x 7.5 kV.A). =	\$11,430
Capital cost of building facilities.....=	\$10,000

The customer will not be required to make any contribution, and because it is a breakered service it will be billed based on a demand of 7.5 kV.A

Example 2: Farm

Price Schedule..... =	D56
Breaker Size..... =	7.5 kV.A
Available company investment level..... =	\$1,524/kV.A
Available company investment level (\$1,524/kV.A x 7.5 kV.A). =	\$11,430
Capital cost of building facilities..... =	\$13,000
Required Customer Contribution (\$13,000 - \$11,430)..... =	\$1,570

The customer will be required to make a contribution of \$1,570, and because it is a breakered service it will be billed based on a demand of 7.5 kV.A

9.3.5 Street and Sentinel Light Services

9.3.5.1 Determining the Amount of Investment

There are a number of different investment options for street and sentinel or private lighting. However they all grant a specific fixed investment per standard lighting fixture. This fixed amount of investment varies from one to the other depending on the type of light and option chosen by the customer.

9.3.5.2 Sample Investment Calculations (2010 Investment Levels)

Example 1: Standard Street Lighting

Price Schedule.....	=	D61 (B)
Available company investment level per standard light fixture =		\$1,540 / light
Total number of lights required.....	=	100
Available company investment (\$1,540/light x 100 lights).....	=	\$154,000
Capital cost of building facilities.....	=	\$160,000
Customer Contribution.....	=	\$6,000

Usually street lighting applies to municipalities. New street lights usually fall under the investment option. In this case the customer is required to make a \$6,000 contribution, since the cost of the installation exceeds the company's maximum investment.

Example 2: Standard Private Lighting

Price Schedule.....	=	D63 (A)
Available company investment level per standard light fixture =		\$825 / light
Total number of lights required.....	=	5
Available company investment (\$825/light x 5 lights).....	=	\$4,125
Capital cost of building facilities.....	=	\$4,000
Customer Contribution.....	=	\$0

Private lighting customers have the option of taking service under the investment or non-investment option. In this case the customer has elected to install 5 lights under the investment option. The cost of the project is less than the maximum investment thus no contribution is required from the customer.

9.4 Other Customer Distribution Costs

Before the DCD is set, the company determines the amount of facilities required to serve the customer. The capital costs incurred by the company in extending service to a customer will consist of local extension costs and may also include shared extension costs, upgrading costs, and/or advancement costs.

Local extension costs (C_d) are costs incurred to extend service for the sole purpose of an individual customer.

Shared extension costs (C_s) are costs the company incurs to build facilities for a number of new customers. This component is described in detail in Section 9.4.3.

Upgrading costs (C_u) are simply costs the company incurs to upgrade existing distribution facilities to ensure stability of the system is maintained as additional customers are connected to the distribution grid.

Advancement costs (C_a) apply when a customer or a well defined group of customers request the company to advance the upgrade of existing system facilities caused by their new extension. Advancement costs could include, but are not limited to, the incremental higher costs associated with constructing in a season other than what would normally be done, related carrying costs, and higher construction costs associated with additional mobilization and demobilization.

9.4.1 Allocation of Shared Extension Costs

When all or a part of a new extension is shared by more than one customer the capital costs will be assigned to each customer as per the following formula:

$$C_s = \frac{\text{Customer's estimated operating load} \times \text{Capital costs of the shared facility}}{\text{Total load served by the new facility}}$$

For example, if a new extension supplies a total of 225 kW and three customers are supplied with estimated operating loads of 50 kW, 75 kW and 100kW, and all three loads share a portion of line that costs \$30,000, each customer would be assigned the following costs:

50 kW customer	(50/225) X \$30,000	= \$ 6,667
75 kW customer	(75/225) X \$30,000	= \$10,000
100 kW customer	(100/225) X \$30,000	= \$13,333
Total	225 kW	\$30,000

In most cases, the total costs assigned to each customer include:

- that customer's portion of shared facilities, plus
- the cost of the facilities dedicated to serve that individual customer.

If the system does not have adequate capacity available to serve a new customer's load, ATCO Electric will upgrade the existing system. In most cases this will be done at no cost to the customer. However, if the upgrade is for the sole use of the new customer and there is little chance other customers will use the additional capacity, some or all of the costs may be allocated directly to the customer. Many factors need to be considered in the decision to allocate system upgrade costs directly to a customer. ATCO Electric will make the determination by applying professional judgment on a case-by-case basis.

9.4.2 System-Related Facilities versus Customer-Related Facilities

When a new extension is required to serve a customer (or group of customers), ATCO Electric will also determine whether the facilities that need to be constructed shall be assigned to the customer (or group of customers) or directly assigned to system.

9.4.2.1 The Assignment of New Extension Costs to Customers

The following flowchart is used to determine the portion of capital costs associated with new or upgraded facilities that will be assigned directly to the customer. The flowchart assigns cost responsibility to the variables C_u , C_s , C_d and C_a

Where:

- C_u = Customer related system Uppgrade costs;
- C_s = Customer portion of Shared new extension costs;
- C_d = Customer Dedicated facility costs;
- C_a = Customer assigned advancement costs.

Total Customer related capital costs (C_t) are calculated as follows.

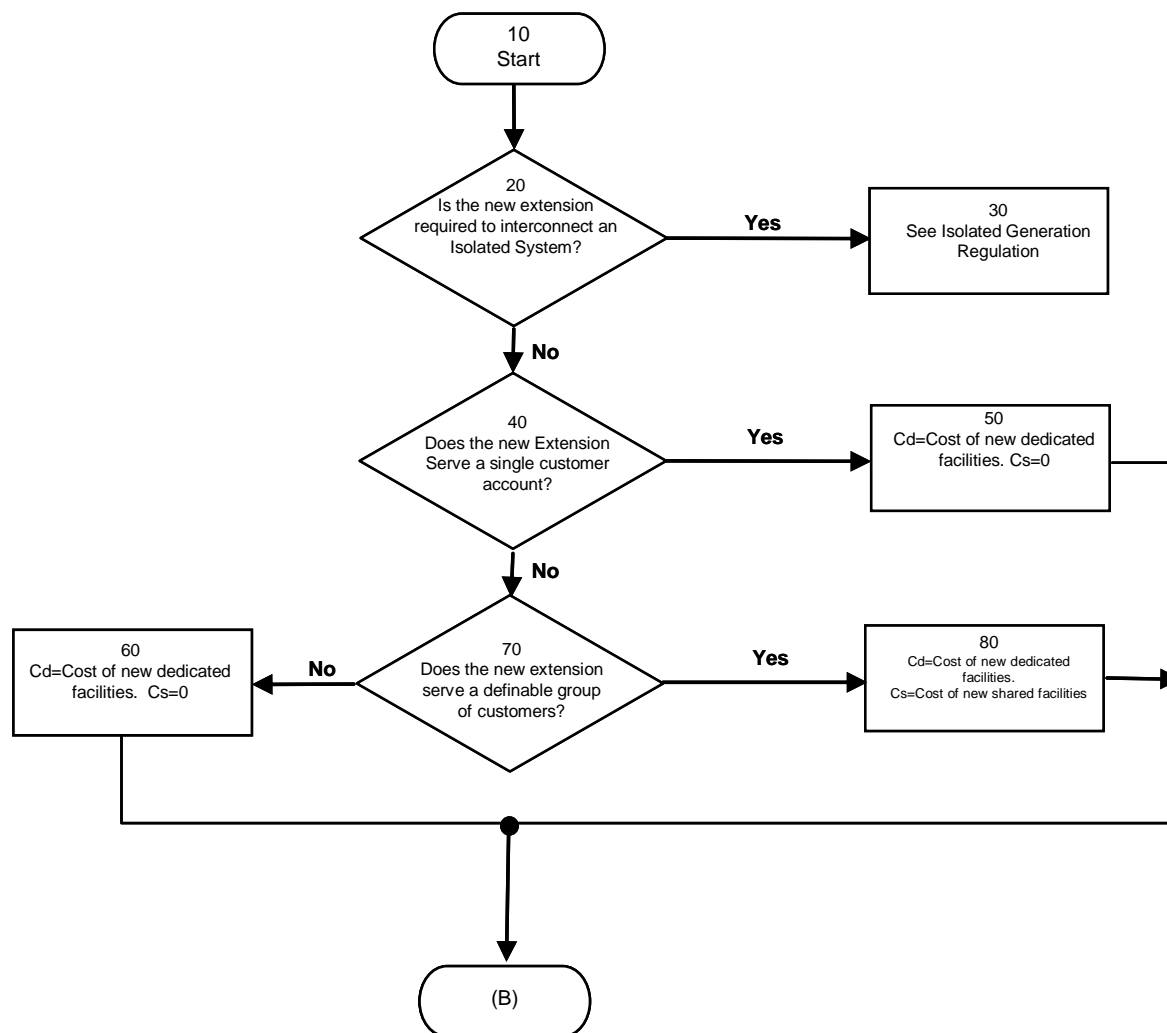
$$C_t = C_u + C_s + C_d + C_a.$$

The variable C_t is then used to determine the contribution paid by the customer, to ATCO Electric as follows.

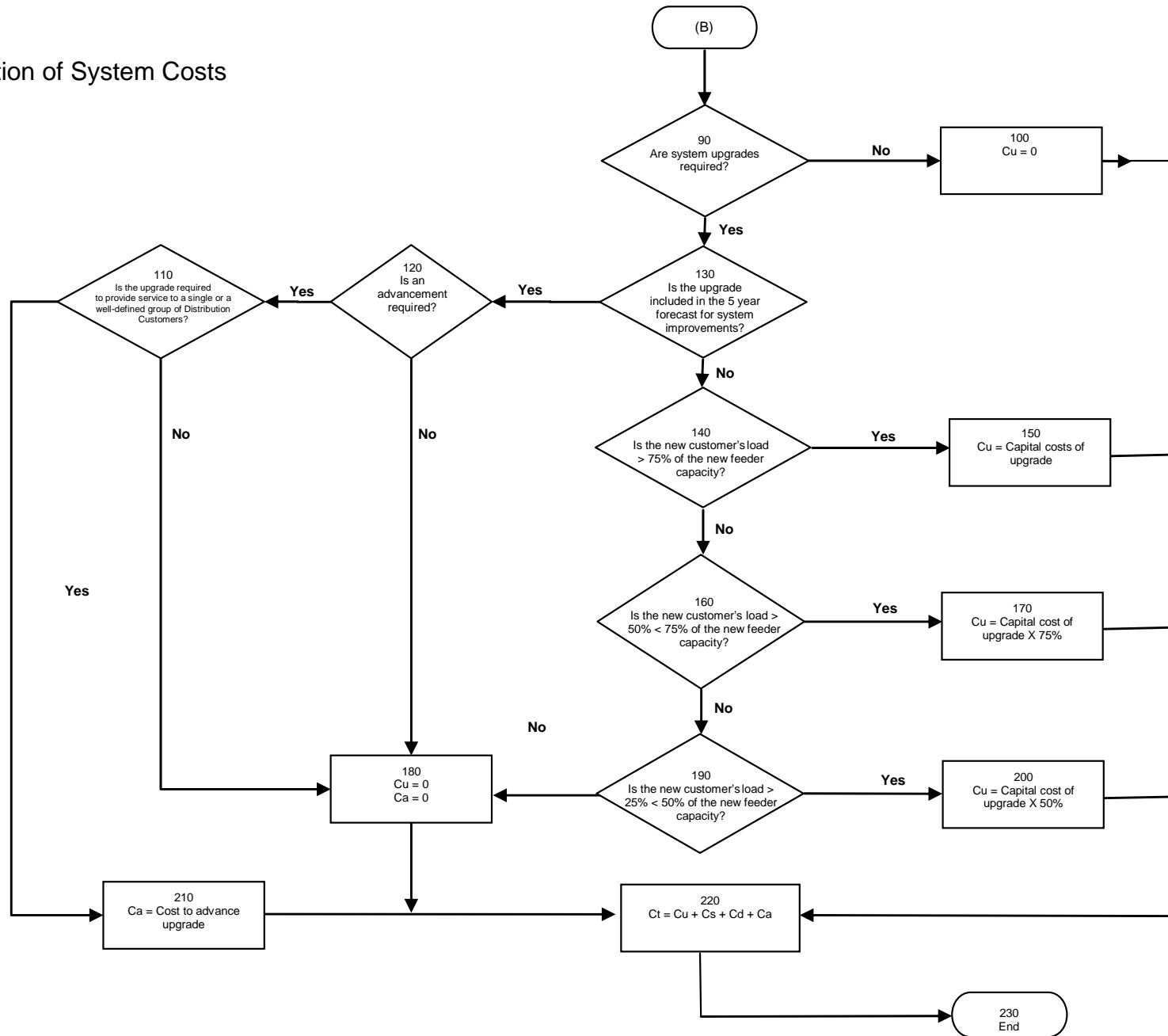
Contribution paid by the customer = C_t - Maximum available investment

Flowchart

Allocation of Dedicated and Shared Costs



Allocation of System Costs



9.4.3 Cost Sharing

A customer is only entitled to cost sharing during the Initial Term of their contract. As well, all new customers, or existing customers who elect to renegotiate their contract because of a change in their service requirements, can have their rights to cost sharing extended if they elect to increase the initial term of their contract. Cost sharing is the process of refunding a portion of a previously paid contribution. If the customer was not required to pay a contribution or the contribution has been reduced to \$0 from a previous cost share application, the customer has the right to further cost sharing through a lower DCD.

Cost sharing occurs when ATCO Electric builds a new extension for a customer that uses a portion or all of an existing extension that another customer paid a contribution to. In the interest of balancing the complexity and administration associated with this situation, ATCO Electric has the following rules in place:

- (1) The new customer must connect within the initial term of the first customer's contract.
- (2) The new customer must be one of the first three customers that connect to the original customer's extension. However, if the original customer(s) paid a contribution of \$200,000 or greater and is in the initial term of their contract, cost sharing will apply beyond the three customer rule. This will occur until the remainder of the original contribution is less than \$200,000.

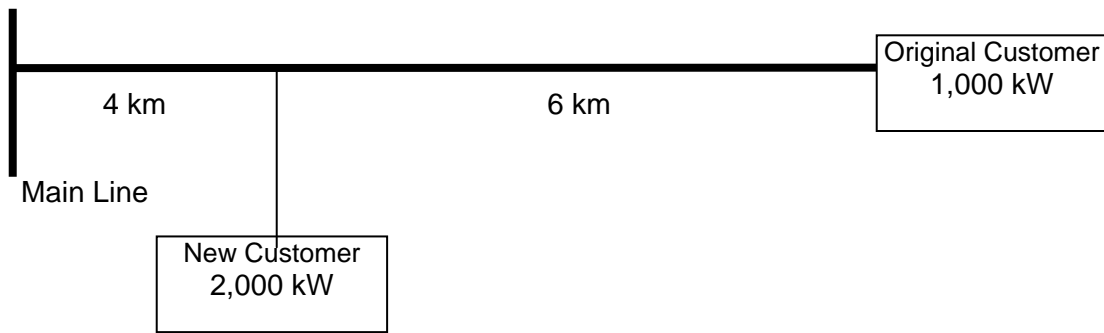
Cost sharing is calculated based on:

- the least-cost option available to the new customer, or
- the following calculation, based on the extension cost associated with the amount of system shared in kilometers; and the ratio of the new customer's operating load (kW) to the total operating load (kW).

Example: (see diagram below)

Length of dedicated extension for Existing Customer	=	10 km
Existing customer's extension cost towards the original 10km line.....	=	\$100,000
Existing customer's contract load.....	=	1,000 kW
Length of dedicated extension shared by the two customers	=	4 km
New customer's contract load	=	2,000 kW
Original cost of shared portion of line = \$100,000 x 4/10.....	=	\$40,000
The ratio of new customer's operating load (kW) to total operating load (kW) 2000 kW ÷ 3000 kW.....	=	.66667
New customer's proportional share of line costs = \$40,000 X .66667.....	=	\$26,667

In this example, the amount refunded to the existing customer would be \$26,667.



However, if an alternative, lower-cost solution (i.e., connection to another distribution line in the area) was available to the new customer, the amount refunded to the existing customer would be based on the amount of that lower-cost alternative.

In this example, if the customer was not required to pay a contribution, the existing customer's DCD would be lowered based on the new customer's share of line costs.

9.5 Ownership of Facilities

9.5.1 Transmission

In accordance with the Transmission Policy of the Alberta Electric System Operator (AESO), all new transmission facilities will be directly assigned to the incumbent Transmission Facility Owner in the service area where the facilities will be constructed. All transmission is regulated by the AUC, regardless of who has ownership of the transmission facility.

9.5.2 Distribution

Customers can also own distribution facilities, provided that they are limited to the following, subject to Part 3 of the Hydro and Electric Energy Act:

1. the facilities reside on the land that the customer is the sole owner or tenant of;
2. the facilities do not cross road allowances;
3. the facilities must serve the owner or tenant, and not other customers;
4. a permit and a license to construct granted by the Alberta Utilities Commission, with a copy of the approval provided to ATCO Electric.
5. the installation must abide by any/all applicable Acts, Regulations and Orders
6. there is no change to, or alteration in any way to ATCO Electric's service area boundaries.

9.6 Backout Electric Service Agreement

A Backout Electric Service Agreement (ESA) complements acceptance of a written Proposal Letter, to allow construction to proceed on a project before the Electric Service Agreement is finalized. The intent of a Backout Electric Service Agreement is to safeguard ATCO Electric and its customers against any capital expenditures that may be incurred for a project that is subsequently terminated. This may be necessary in a situation where ATCO Electric, for example, has had to procure equipment and materials well in advance of completing the commercial arrangements in order to provide service to a customer by the required in-service date. A copy of a standard Backout Electric Service Agreement is located in Schedule E of the Terms and Conditions for Distribution Service Connections.

9.6.1 Application

A Backout Electric Service Agreement is typically executed when the capital cost to provide the service is greater than \$500,000. However a backout agreement can also be executed if:

- a construction period of greater than one year is expected;
- the customer has an unacceptable payment history;
- the customer's project is unconventional, e.g. a prototype process;
- the customer's project has large quantities or non-standard material requirements.
- the service facilities are non-standard to ATCO Electric; or
- any other unusual circumstances prevail.

9.7 Facilities Charge

A customer may wish to have ATCO Electric build, operate and maintain facilities on their property. ATCO Electric will provide the required facilities in exchange for a monthly charge paid by the customer over a pre-defined period of time designed to recover the invested cost of the facilities, and operation and maintenance ("O&M") costs. When ATCO Electric's invested cost of such facilities is fully recovered, the service charge for operation and maintenance ("O&M") would remain until such time as the facilities are no longer required and removed from service. Any capital improvements/additions to the customer's facilities will require a change to the monthly charge paid by the customer. It is important to note as well that these facilities remain the sole property of ATCO Electric.

The facilities charge is calculated on the basis of a number of factors, such as the original capital cost to provide the facilities, return, depreciation, income tax, operating and maintenance costs, and administration and general costs. A facilities charge is usually calculated as a monthly charge based on the annual book value of the facilities divided by 12, over an agreed upon amortization period, which is commonly, but not exclusively, a maximum of 25 years.

9.8 Dispute Resolution

Should a dispute arise between the Company and a Customer regarding the interpretation or application of the Customer Guide to New Extensions, the parties will attempt to negotiate a resolution to the issues in dispute. If such issues have not been resolved within a period of ten (10) business days following the date on which written notice of the dispute was given by the Customer to the Company, the matter shall be referred to a representative of senior management for each party for resolution. If, following an additional period of the (10) business days, senior management is unable to resolve the matter in dispute, either party may refer the matter in dispute to the AUC for resolution.

Chapter 10 Changes to Commercial Terms

10.1 Change in Distribution Contract Demand (Buy-downs & Buy-ups)

Customers have flexibility in balancing two types of payment for a new extension to suit their needs – up-front customer contributions vs. payment through ongoing electric rates. As explained in the previous section, ATCO Electric recovers its investment in commercial, industrial and oilfield extensions through the DCD. If the nature of an operation changes over time from what was originally anticipated, a customer may wish to take advantage of options to change their DCD. Likewise farm customers that have their minimum bill based on the size of their installed breaker can also benefit from a change in the breaker size. This does not apply to residential customers since investment is made on a per site basis and they do not have a demand component to their bill.

10.1.1 Increase in Distribution Contract Demand (Buy-ups)

If a customer's load requirement changes whereby their operating load is higher than expected, ATCO Electric will refund a portion of the original contribution provided the customer is willing to increase their DCD. This kind of refund can only take place during the initial term of the customer contract. As well, all new customers, or customers who elect to renegotiate their contract because of a change in their service requirements, can have their rights to buy-ups extended if they elect to increase the initial term of their contract.

10.1.2 Decrease in Distribution Contract Demand (Buy-downs)

If a customer's operating demand falls below the DCD, the customer may choose to buy down the contract and reduce the monthly DCD charges. A superseding contract will be issued outlining the new terms. Full payment of the buy-down contribution will be required prior to the new DCD being applied to the service.

10.1.3 Change in Distribution Contract Demand Tables (under 500 kW)

The tables shown in Schedule G of the Terms and Conditions for Distribution Service Connections have been set up to help customers with contracts under 500 kW determine the cost or refund associated with changing their contractual obligations. The calculations are based on the maximum available investment levels in the particular contractual year, going back 25 years.

Before 1987, ATCO Electric applied the same D31 maximum investment levels to customers regardless of the size of the customer load. Schedule G can be used to determine the cost or refund associated with changing contractual obligations for any load level, if the contract was initiated before 1987. However, the values in the table only apply to loads less than 1,999 kW for contracts that originated between 1987 and 1990, and only apply to loads less than or equal to 500 kW for contracts originating thereafter. The values in Schedule G are based on net present value calculations using the applicable Commission approved cost of capital.

For example, an existing customer served under Price Schedule D41 with a DCD of 40 kW would like to increase their DCD to 50 kW in 2009. The original contract date was 2004. Since the customer is within the 5 year initial term of the contract, the contribution refund (buy-up) is determined using the value found in the table that corresponds to Price Schedule D41 and a contract year of 2004 multiplied by the change in DCD: $\$452 \times 10 \text{ kW} = \$4,520$. Conversely, the same methodology would apply for a buy-down calculation, whereby the customer would owe ATCO Electric $\$4,520$ for a decreased DCD of 10 kW.

10.1.4 Change in Distribution Contract Demand (over 500 kW)

Customers that have a DCD over 500 kW can determine the cost or refund associated with changing their contractual obligations by using the Present Value (PV) and Payment (PMT) functions on a financial calculator or spreadsheet.

Contribution refund or buy-down = $PV(i, \text{remaining life}, PMT_0 - PMT_1)$

Where:

PMT_0 = PMT (i, life, original investment)

PMT_1 = PMT (i, life, new investment)

i (wacc) = ATCO Electric's weighted average cost of capital at the time of the original contract (Schedule G, Table 4)

new investment = investment level (\$/kW) at the time of the original contract, multiplied by the new demand level

life = estimated service life of the asset (typically 25 years for Rate 21 and 31, 15 years for Rate 41 as defined in Schedule B of the Terms and Conditions)

remaining life = life minus the year of the buy-down

Example 1: Buy-down

Assume that in 2009, a large industrial customer serviced under Price Schedule D31, with a DCD of 1000 kW, would like to buy-down the contract to 800 kW, five years after the extension was built in 2002.

Assume:

Weighted average cost of capital of 10.23% (2002)

Investment level of \$215 per kW (second block) (Schedule G, Table 3)

Original second block = 1000 kW - 500 kW (initial block level) = 500 kW

Revised second block = 800 kW - 500 kW (initial block level) = 300 kW

Asset life of a large industrial customer is 25 years.

PMT0=(i	n	PV)
PMT0=(wacc = 10.23%	Life of the asset = 25 years	500 kW x \$215/kW)
PMT0 = \$12,053.10		
less		
PMT1= (i	n	PV)
PMT1= (wacc = 10.23%	Life of the asset = 25 years	300 kW x \$215/kW)
PMT1 = \$7,231.86		
Difference is \$4,821.24		
<u>Buy-down amount =</u>		
PV= (i	n	PMT)
PV = (wacc = 10.23%,	18 years life remaining	PMT₀-PMT₁ = \$4,821.24)
PV = Buy-down amount = \$38,965		

In this example, the customer would pay \$38,965 to ATCO Electric. This represents the change in the un-recovered capital of the original investment between the DCD at 1,000 kW and the new DCD at 800 kW.

Example 2: Contribution refund

Assume that a customer with a DCD of 900 kW in 2002 elects to change the contract to 1,200 kW in 2009.

Assume:

Customer's contribution = \$100,000

Weighted average cost of capital of 10.23%

Original Second block = 900 kW - 500 kW (initial block level) = 400 kW

Revised Second Block = 1200 kW - 500 kW (initial block level) = 700 kW

Asset life of a large industrial customer is 25 years

PMT₀	(i)	n	PV)
PMT ₀ =	(wacc = 10.23%	Life of the asset = 25 years	400 kW x \$215/kW)
PMT ₀ = \$9,642.48			
less			
PMT₁	(i)	n	PV)
PMT ₁ =	(wacc = 10.23%	Life of the asset = 25 years	700 kW x \$215/kW)
PMT ₁ = \$16,814.35			
Difference is \$7,231.86			
<u>Contribution refund =</u>			
PV=	(i)	n	PMT)
PV =	(wacc = 10.23%,	18 years life remaining	PMT₀-PMT₁ = \$-7,231.86)
PV = \$-58,447			

In this example, ATCO Electric would invest a further \$58,447 in the customer's facilities and thus the customer would receive a contribution refund in that amount. This represents the change in the additional capital of the original investment at a DCD of 900 kW and the new DCD at 1,200 kW.

10.2 Exit Provisions

If a customer's business requirement changes and they no longer have a need for electric service, the customer may be required to pay an exit fee. Contract exit provisions are in place in order to ensure that costs are not unduly transferred to other customers when a customer leaves the system.

10.2.1 Distribution

If a customer elects to have service salvaged within the initial term of its Electric Service Agreement, the customer will be required to pay for ATCO Electric's unrecovered investment in the facilities built to serve them, determined in a similar procedure to a buy-down, except that the buy-down is to a DCD = 0. It is important to note that the obligation under the exit provisions of the Terms and Conditions extends if a customer has elected to increase the initial term of its contract. The exit provisions are outlined in Section 15 of the Terms and Conditions for Distribution Service Connections.

10.2.2 Transmission

The transmission system is an integral part of the overall provincial power system. In order for ATCO Electric to serve its customers effectively, we purchase capacity and system support services from the AESO. The AESO charges ATCO Electric on the basis of a minimum contract demand for each transmission "point of delivery." The contract demand ensures the AESO can recover the costs necessary to provide services to customers in the province.

ATCO Electric contracts with the AESO for transmission service and incurs transmission costs in accordance with the approved AESO tariff. When a customer no longer requires service from ATCO Electric, the customer may be required to pay any applicable transmission related exit costs charged to ATCO Electric by the AESO.

Chapter 11 Billing

11.1 Delivery Charges

ATCO Electric has designed its delivery rates into three separate charges: customer, demand and energy.

The purpose of these types of charges is to better reflect and charge for costs as they are incurred. The charges are as follows:

Customer Charge - is designed to recover some of the costs of serving a customer that are present regardless of how much energy that customer uses.

Demand Charge - relates to how quickly or consistently energy is consumed. A customer who uses a lot of energy all at once causes more costs than a second customer who may use the same total amount of energy, but uses it steadily.

Energy Charge - is based on how much energy is consumed. It is important to not confuse this with the cost of purchasing energy. It is related to **delivery only** and recovers the costs that increase when the system must deliver more energy.

These are further separated to identify transmission, distribution and service components as follows:

Transmission - ATCO Electric's customers are served with the help of a province-wide high-voltage grid, operated by the Alberta Electric System Operator (AESO). The AESO charges ATCO Electric for use of this system, including such services as system support, voltage control and stable system frequencies to ensure reliable service.

Distribution and Service - These costs include:

- Investment made in building facilities, such as poles, conductors and transformers. Facilities are built so they can routinely absorb the start-up of large motors or equipment without affecting other customers.
- Labour and material relating to the operation and maintenance of the distribution system.
- Meter reading.
- Information transfer, settlement and customer accounting (including billing costs specific to retailers.)

11.2 Demand Ratchet

As stated earlier, the power bill for commercial, industrial, oilfield and farm customers with a demand meter includes a "demand charge". This demand charge is related to the **peak** demand for power. As a wires service provider, sufficient systems and infrastructure must be in place to deliver power to meet customers' peak load requirements through widely varying time periods. To ensure customers pay a fair allocation of the fixed costs of the electric system, a demand ratchet is used as part of the calculation of the demand charge. A demand ratchet means that a customer is billed on some portion of their highest historical demand, if it is higher than their peak power demand in the current month. The costs caused by customer demand, in particular deep system, O&M, and possibly transmission costs do not immediately disappear with a reduction in demand. In fact, transmission charges incurred on behalf of a customer may remain over a period of up to 24 months. A demand ratchet has the effect of recapturing some of these costs.

For example, a D31 large industrial customer who has a connected pump that measured a demand of 90 kW in August, but had set a peak demand of 120 kW the previous December, will have their demand charge for August considering the highest measured peak in last 11 months. The ratchet for different customer rates is defined in the applicable Distribution Tariff Price Schedules.

There are certain conditions whereby the company may waive a customer's demand ratchet. These are outlined in Section 11 of the Terms and Conditions for Distribution Service Connections. Similarly, ATCO Electric will waive a new peak demand to the customer if the AESO waives the new peak demand to the company.

11.3 Payment Terms

11.3.1 Billing

The billing of the delivery charges to customers is usually done through the retailer's bill. Payment is subject to the conditions set forth by the selected retailer. Usually the distribution charges are flowed through directly as billed from ATCO Electric.

11.3.2 Contribution Payment

If a construction contribution is required, the customer must pay it upon receipt of an invoice from ATCO Electric for such amount or when service is first made available to the customer's facility, whichever is earlier. If the customer fails to pay by the date indicated on the invoice it shall be considered past due. ATCO Electric reserves the right to assess a late payment charge as set out in the Terms and Conditions.

11.4 Sample Bills

ATCO Electric passes the distribution and transmission charges from the Price Schedules on to retailers. The retailers, in turn, incorporate these charges into their bill which includes their administration fee and energy charge. For those customers who elect to self-retail, ATCO Electric will pass the charges from the Price Schedule directly to the customer.

Please refer to [Appendix A](#) for sample bill calculations applicable to different types of customers.

11.5 Calculating Bills

Rates are charged daily; customers are billed based on the number of days that service was provided in the billing period. The charge is determined by the number of days that service was provided in that period.

The same applies when a meter reading schedule is changed. ATCO Electric assigns each customer to a predetermined meter-reading schedule when service begins. When a meter reading schedule is changed, the fixed charges will be determined using the number of days that service was provided to the customer in the transition period.

11.6 Customer Access to Metering Data

11.6.1 Customer Usage Information

ATCO Electric will provide standard customer usage information to a customer upon request for:

- (1) the 12-month period preceding the date of the request, or
- (2) for any shorter period for which the company has collected that information.

There are several formats in which the customer can obtain this information. Typically by contacting the customer call centre, they will be able to assist the customer regarding this matter. Each customer (or their agent) will be required to sign a copy of the “Authorization and Release Form” prior to the usage information being released. A copy of this form can be found in [Appendix B](#).

This service is free of charge for one request per year. If the customer, or the customer’s agent or retailer, requires data more than once per year, ATCO Electric has the right to charge the customer for the amount of time it takes to retrieve and deliver this data. The charge for this service is set out in the Terms and Conditions - Schedule F – Supplementary Service Charges.

11.6.2 Request for Interval Meter

Interval meters are standard for all customers with loads of 500 kW or greater, or as required for the purposes of micro-generation. The cost of the interval metering will be included in the capital cost to serve new customers and may be offset by the available company investment. Subject to the Micro-Generation Regulation, interval meters for large micro-generation customers (more than 150 kW) will be installed at no charge.

Customers under 500 kW or small micro-generation customers (less than 150 kW) who request interval metering are required to pay all the capital costs associated with the meter as well as a monthly fee (as outlined in Schedule F of the Terms and Conditions). This fee represents the ongoing operating and maintenance costs of the meter. The interval data can be obtained by following the procedures outlined in Section 11.6.1 of this guide.

11.6.3 Read-Only Access to Metering Data

Upon written request to ATCO Electric, a customer with an interval meter may access pulse data from its meter.

To access the meter, the customer will be responsible to pay the incremental costs involved in (a), labour associated with programming of a new interval meter for read-only access, and (b) labour associated with travel time, installation, and testing of the new meter.

The customer will also be responsible for the cost of telephone access to the meter and the costs of the software required to access the interval meter.

After the request is made by the customer, the company will provide a proposal to the customer outlining the costs components listed above.

Chapter 12 Distribution Generating Customers

Distribution connected customers can apply to ATCO Electric and the AUC to build and operate a distribution connected generating unit at their site to offset load. Distribution Generating (DG) customers can be divided into two classifications: 1) micro-generators and 2) non-micro-generators.

Micro-generation (MG) is regulated under the Micro-generation Regulation that customers must abide by in order to qualify as a micro-generator. Micro-generation generating units must be sized to meet all or a part of a customer's own electricity need but is not to exceed a nominal capacity of 1 MW. These generating units are required to use renewable or alternative energy as a source of power such as solar, wind, hydro, fuel cell, geothermal, biomass or other source of energy that produces a greenhouse gas intensity less than or equal to 418 kg per MW.h. Please refer to ATCO Electric's website for more details on applying for approval to install a [Micro-generation Generating Unit](#). There is no application fee associated with MG Applications. Please ensure that you understand all requirements of a MG before applying.

All other generating units (non-micro-generators) that do not fit these qualifications will follow a similar process however additional costs are to be borne by the generating customer outlined below in Section 12.1.

12.1 Required Steps for Interconnection

The generating customer can determine whether or not the location of their facility is in the company's service area by reviewing ATCO Electric's service area map found on the company's web site at www.atcoelectric.com.

It is important the generating customer becomes familiar with some of the technical and operating requirements necessary to safely connect to ATCO Electric's distribution system. These requirements are explained in detail in the following documents located on the company's web site. These documents can also be obtained by contacting ATCO Electric's Industrial Services (refer to Section 5.2.2 of this Guide.)

12.1.1 Generator Interconnection Manual

This manual outlines the technical requirements and procedures for interconnecting a generator with ATCO Electric's distribution system. Subject to the Micro-generation Regulation, some of these requirements are as follows:

- The generating customer is responsible for all engineering studies and protection designs.
- Become a AESO Market Participant and comply with any requirements (unless all energy produced at the site is to be consumed at the site).
- Provide technical information to ATCO Electric and to the AESO, as specified in Appendix II of the Generator Interconnection Manual.
- Design, install, operate and maintain the interconnection facilities. All necessary designs and drawings shall be signed and stamped by a Professional Engineer; or shall be certified by an accredited certification organization and conform to the current edition of Part I of the Canadian Electrical Code.

- Pay the incremental costs of interconnection in accordance with commercial terms established by the ATCO Electric.
- Obtain all required permits and licenses, which include:
 - Ensuring that the local inspection and code enforcement authorities accept the installation, or that the installation falls under the jurisdiction of an accredited corporation.
 - Before commissioning and commencing parallel operation, obtain the approval of ATCO Electric and establish an approved operating agreement with ATCO Electric as specified in Appendix VI of the Generator Interconnection Manual, covering the technical and operating requirements.
 - Obtaining Alberta Utilities Commission (AUC) approval and order to connect, and provide the AUC approval and order numbers to the Wires Owner. AUC approval requires an operating agreement to be in place between the Power Producer and ATCO Electric.
 - Obtaining written approval from ATCO Electric before parallel operation and before any modification is made to the power producer's system.
 - Negotiate the timing and any testing requirements for the commissioning process with ATCO Electric, and if needed, with the AESO and/or the System Controller

12.1.2 Meter Data Manager Requirements for Distributed Generators

This document defines the requirements of distributed generators in meeting obligations to the Load Settlement Agent (LSA). It does not deal with physical meter issues and specifications. It addresses only the management of the meter data from those meters.

12.1.3 Terms & Conditions for Distribution Service Connections

The Terms & Conditions for Distribution Service Connections apply to all services connected to ATCO Electric's distribution system, including distribution connected generators. Section 9 of the Terms and Conditions contains specific requirements with regard to generators.

12.1.4 Distribution Generator Application Form

To request service, a generating customer is required to complete the [Generator Application Form](#) (sample is found in [Appendix C](#)) and submit it with the respective application fee. Application can be made on-line or print and mail the form. Micro-generation generating customers can apply using the [Micro-generation Generating Application Form](#)

The application fee is required prior to ATCO Electric commencing the preparation of a cost estimate for the interconnection of a non-micro-generation generator. Application fees vary depending on the project. Please refer to the fees listed in the Supplementary Service Charges, Schedule F, of the Terms and Conditions for Distribution Service Connections to determine the application fee. No fee is applicable to MG facilities. Please ensure that you understand all requirements of a MG before applying.

Site plans, Single Line Diagrams (SLDs), proposed protection scheme, and generator specifications are required with the application. Upon receipt of the completed application form, a sales representative will be in contact to discuss the project.

Missing or incomplete information could cause delays in ATCO Electric providing a cost estimate.

12.1.5 Review Commercial Terms

Carefully review the commercial terms offered in ATCO Electric's proposal. If the proposal terms are acceptable and agreed upon by the generating customer, ATCO Electric will prepare an [Operating Agreement](#) and an Electric Service Agreement for Generating Customers. Refer to [Appendix E](#) for a sample copy of an Electric Service Agreement for Generating Customers.

Micro-generation customers can refer to the Alberta Utilities Commission's [Micro-generator Application Guide](#) for a sample copy of the Interconnection and Operation Agreement form.

Upon successful completion of the operating agreement, payment of the capital contribution and execution of the Electric Service Agreement, ATCO Electric will construct the outlined distribution facilities and interconnect the generator.

ATCO Electric will not connect the facility or permit the facility to be connected to the distribution system until the Alberta Utilities Commission (AUC) has issued an order for the interconnection, and the order number is provided to ATCO Electric. This order requires that an operating agreement be executed between ATCO Electric and the generating customer.

12.2 Commercial Requirements

Generating customers intending to connect to ATCO Electric's distribution system are required to meet the commercial requirements established by ATCO Electric in its Commission approved tariff. One of the important components of this tariff is the incremental treatment approach of interconnection costs to the distribution system whereby generating customers are responsible for all incremental costs associated with connecting the generator to the distribution system. These costs will be outlined in ATCO Electric's proposal for electric service. Other important components of the tariff include:

- Price Schedule D32. This price schedule comprises the delivery charges for generating customers who require standby power to on-site load. It also addresses the manner in which operations & maintenance charges and administration & general charges are applied to the incremental interconnection costs charged to the generating customer.
- Terms & Conditions for Distribution Service Connections. This document governs the business relationship between the generating customer and ATCO Electric. It outlines the rules for interconnection and the obligations of both the customer and the company. It is important to understand your rights and obligations before taking service. Section 9.0 was developed specifically for generating customers.
- Electric Service Agreement for Generating Customers. This Electric Service Agreement brings all of the above commercial pieces together. Your ATCO Electric representative will work with you to help answer your questions and ensure you understand the provisions as set out in your Tariff.

There may be circumstances where the generator is embedded in an existing load site, whereby the contract terms at the load site would be transferred to D32.

APPENDIX A: Sample Bills

The following are sample bill calculations for different types of customers, using the Rates and Riders effective as of July 1, 2010.

Residential – D11

Billing Information			
Rate Code:	D11		
Charge Period:	01-Jul-2010	to	31-Jul-2010
		Days of consumption:	31 days
Energy Consumption:	600.00 kW.h		
Municipal:			
Current Charges			
<u>Delivery Charges</u>			AMOUNT
Customer Charge Distribution	\$0.6510 /day	x 31 days	\$20.18
Customer Charge Service	\$0.2528 /day	x 31 days	\$7.84
Energy Charge Transmission	\$0.0175 /kW.h	x 600.00 kW.h	\$10.50
Energy Charge Distribution	\$0.0531 /kW.h	x 600.00 kW.h	\$31.86
		Base Rate	\$70.38
<u>Rate Adjustment Riders</u>			
Rider G + Rider J Temporary Adjustment	(\$0.01004) /kW.h	x 600.00 kW.h	(\$6.02)
Rider B Balancing Pool Adjustment	(\$0.00210) /kW.h	x 600.00 kW.h	(\$1.26)
		Net Base Rate	\$63.10
<u>Municipal Franchise Assessment</u>			
Surcharge for Municipal Assessment	\$70.38	x 0.00%	\$0.00
		Total Delivery Charge	\$63.10
<u>Federal Tax</u>			
GST	\$63.10	x 5.00%	\$3.15
		Current Billing	\$66.25

Commercial – D21

Billing Information				
Rate Code:	D21			
Charge Period:	01-Jul-2010	to	31-Jul-2010 Days of consumption: 31 days	
Load Factor:	0.81			
Minimum Demand:	5.00 kW	}		
D-Contract Demand:	25.00 kW		Billing Demand (D)	25.00 kW
Measure Demand:	20.00 kW		Billing Demand (T)	20.00 kW
Ratchet Demand:	0.00 kW			
T-Contract Demand:	0.00 kW			
Energy Consumption:	12,000.00 kW.h	(D) (Blk 1: 5,000.00 kW.h ; Blk 2: 7,000.00 kW.h)		
		(T) (Blk 1: 4,000.00 kW.h ; Blk 2: 8,000.00 kW.h)		
Municipal:				
Option H:	No			
Option P (REA Customers in OM Pool Only):	No			
Current Charges				
<u>Delivery Charges</u>			AMOUNT	
Customer Charge Service	\$0.3258 /day	x 31 days	\$10.10	
Demand Charge Transmission	\$0.0922 /kW/day	x 20.00 kW x 31 days	\$57.16	
Demand Charge Distribution	\$0.1781 /kW/day	x 25.00 kW x 31 days	\$138.03	
<u>Energy Charge</u>				
First block Transmission	\$0.0042 /kW.h	x 4,000.00 kW.h	\$16.80	
First block Distribution	\$0.0328 /kW.h	x 5,000.00 kW.h	\$164.00	
Second block Transmission	\$0.0042 /kW.h	x 8,000.00 kW.h	\$33.60	
Second block Distribution	\$0.0000 /kW.h	x 7,000.00 kW.h	\$0.00	
Base Rate			\$419.69	
<u>Options Adjustment</u>				
Option H	25.00 kW	x \$0.0000 /kW/day	x 31 days	\$0.00
<u>Rate Adjustment Riders</u>				
Rider G + Rider J Temporary Adjustment	(\$0.00210) /kW.h	x 12,000.00 kW.h		(\$25.20)
Rider B Balancing Pool Adjustment	(\$0.00211) /kW.h	x 12,000.00 kW.h		(\$25.32)
Net Base Rate			\$369.17	
<u>Municipal Franchise Assessment</u>				
Surcharge for Municipal Assessment	\$419.69	x 0.00%		\$0.00
Total Delivery Charge			\$369.17	
<u>Federal Tax</u>				
GST	\$369.17	x 5.00%		\$18.46
Current Billing			\$387.63	

Large General Service – D31

Billing Information			
Rate Code:	D31		
Charge Period:	01-Jul-2010	to	31-Jul-2010
			Days of consumption: 31 days
Load Factor:	0.83		
<u>Distribution Demand</u>		<u>Transmission Demand</u>	
Minimum:	50.00 kW	Minimum:	50.00 kW
Contract:	300.00 kW	Contract:	0.00 kW
Measure:	325.00 kW	Measure:	325.00 kW
Ratchet:	255.00 kW	Ratchet (11):	255.00 kW
		Ratchet (23):	0.00 kW
	Billing 325.00 kW (Blk 1: 325.00 kW Blk 2: 0.00 kW)		Billing 325.00 kW (Blk 1: 325.00 kW Blk 2: 0.00 kW)
Energy Consumption:	200,000.00 kW.h		
Measured kV.A (for calculating Deficient Power Factor):	370.00 kV.A		
Municipal:			
Option H:	No		
Option P (REA Customers in OM Pool Only):	No		
Current Charges			
<u>Delivery Charges</u>			AMOUNT
Customer Charge Distribution	\$0.1425 /day x 31 days		\$4.42
Customer Charge Service	\$2.2070 /day x 31 days		\$68.42
<u>Demand Charge</u>			
First block Transmission	\$0.1361 /kW/day x 325.00 kW x 31 days		\$1,371.21
First block Distribution	\$0.2073 /kW/day x 325.00 kW x 31 days		\$2,088.55
Second block Transmission	\$0.1582 /kW/day x 0.00 kW x 31 days		\$0.00
Second block Distribution	\$0.1626 /kW/day x 0.00 kW x 31 days		\$0.00
Second block Service	\$0.0067 /kW/day x 0.00 kW x 31 days		\$0.00
Energy Charge Transmission	\$0.0042 /kW.h x 200,000.00 kW.h		\$840.00
Power Factor Charge	\$0.2017 /kV.A/day x 9.25 kV.A x 31 days		\$57.84
		Base Rate	\$4,430.44
Options Adjustment			
Option H	325.00 kW x \$0.0000 /kW/day x 31 days		\$0.00
Rate Adjustment Riders			
Rider G + Rider J Temporary Adjustment	\$0.00182 /kW.h x 200,000.00 kW.h		\$364.00
Rider B Balancing Pool Adjustment	(\$0.00210) /kW.h x 200,000.00 kW.h		(\$420.00)
		Net Base Rate	\$4,374.44
Municipal/Franchise Assessment			
Surcharge for Municipal Assessment	\$4,430.44 x 0.00%		\$0.00
		Total Delivery Charge	\$4,374.44
Federal Tax			
GST	\$4,374.44 x 5.00%		\$218.72
		Current Billing	\$4,593.16

Oilfield Service – D41

Billing Information			
Rate Code:	D41		
Charge Period:	01-Jul-2010	to	31-Jul-2010
		Days of consumption:	31 days
Load Factor:	0.60		
Minimum Demand:	4.00 kW	}	Billing Demand (D): 45.00 kW Billing Demand (T): 42.50 kW
D-Contract Demand:	45.00 kW		
Measure Demand:	40.00 kW		
Ratchet Demand:	42.50 kW		
T-Contract Demand:	0.00 kW		
Energy Consumption:	18,000.00 kW.h		
Measured kV.A (for calculating Deficient Power Factor):	42.00 kV.A		
Municipal:			
Current Charges			
<u>Delivery Charges</u>			AMOUNT
Customer Charge Distribution	\$0.4927 /day x 31 days		\$15.27
Customer Charge Service	\$0.8672 /day x 31 days		\$26.88
Demand Charge Transmission	\$0.1157 /kW/day x 42.50 kW x 31 days		\$152.43
Demand Charge Distribution	\$0.4577 /kW/day x 45.00 kW x 31 days		\$638.49
Energy Charge Transmission	\$0.0043 /kW.h x 18,000.00 kW.h		\$77.40
Power Factor Charge	\$0.4459 /kV.A/day x 0.00 kV.A x 31 days		\$0.00
		Base Rate	\$910.47
<u>Rate Adjustment Riders</u>			
Rider G + Rider J Temporary Adjustment	(\$0.00287) /kW.h x 18,000.00 kW.h		(\$51.66)
Rider B Balancing Pool Adjustment	(\$0.00214) /kW.h x 18,000.00 kW.h		(\$38.52)
		Net Base Rate	\$820.29
<u>Municipal Franchise Assessment</u>			
Surcharge for Municipal Assessment	\$910.47 x 0.00%		\$0.00
		Total Delivery Charge	\$820.29
<u>Federal Tax</u>			
GST	\$820.29 x 5.00%		\$41.01
		Current Billing	\$861.30

Farm Service – D56

Billing Information			
Rate Code:	D56		
Charge Period:	01-Jul-2010	to	31-Jul-2010
			Days of consumption: 31 days
Load Factor:	0.50		
Billing Demand:	7.50 kV.A	Breaker size:	50/75 (7.5 kV.A)
Energy Consumption:	2,800.00 kW.h		
Current Charges			
<u>Delivery Charges</u>			AMOUNT
Customer Charge Distribution	\$0.2558 /day x 31 days		\$7.93
Customer Charge Service	\$0.2883 /day x 31 days		\$8.94
Demand Charge Transmission	\$0.0609 /kV.A/day x 7.50 kV.A x 31 days		\$14.16
Demand Charge Distribution	\$0.1115 /kV.A/day x 7.50 kV.A x 31 days		\$25.92
Energy Charge Transmission	\$0.0043 /kW.h x 2,800.00 kW.h		\$12.04
Energy Charge Distribution	\$0.0055 /kW.h x 2,800.00 kW.h		\$15.40
		Base Rate	\$84.39
<u>Rate Adjustment Riders</u>			
Rider G + Rider J Temporary Adjustment	(\$0.00037) /kW.h x 2,800.00 kW.h		(\$1.04)
Rider B Balancing Pool Adjustment	(\$0.00212) /kW.h x 2,800.00 kW.h		(\$5.94)
		Net Base Rate	\$77.41
		Total Delivery Charge	\$77.41
<u>Federal Tax</u>			
GST	\$77.41 x 5.00%		\$3.87
		Current Billing	\$81.28

APPENDIX B: Authorization and Release Form

TO: **ATCO Electric Ltd.**
10035 - 105 Street
Edmonton, Alberta T5J 2V6

Customer Usage Requests

Fax: (780) 420-7350

Email: CustomerChoice@atcoelectric.com

(A) I/We _____,

("Customer") hereby requests and authorizes ATCO Electric to release requested Customer information related to the Site ID(s) or service location(s) to the recipient listed below and acknowledges that such release may be subject to a fee in accordance with ATCO Electric's Terms and Conditions and Tariffs. **Customer further agrees to release and hold harmless ATCO Electric from any claims, damages, or expenses resulting from the use of or reliance upon the Customer Information including any unauthorized use or disclosure by the Retailer.**

- If the Customer is a corporation, then the individual executing this authorization certifies that he/she has authority on behalf of the Customer to bind the Customer in this regard. (Please check if applicable)
- If an Agent or consultant is acting on behalf of the Customer, then the Agent or consultant certifies that he/she/it has the authority to bind the Customer in this regard. (Please check if applicable).

Requested information;

- Site usage history report for the past 12 months
- Other - _____
- Other - _____

This request and authorization applies to the following Site IDs:

See Attached

#	Customer Site ID	Service Location (LSD or Address)
1	_____	_____
2	_____	_____
—	_____	_____

(If the number of sites exceeds 20, the list must be submitted electronically.)

B) Preferred delivery method:

E-mail Fax Mail

_____ Retailer	_____ Address	_____ City
_____ Province	_____ Contact Name	_____ Phone Number
_____ Fax Number	_____ Email	_____
_____ Customer Name	_____ Agent/Consultant (if applicable)	_____ Customer Address
_____ City	_____ Province	_____ Contact Name
_____ Phone Number	_____ Fax Number	_____ Email

Customer or Authorized

Date

Note: This authorization expires 90 days following the date on this form

APPENDIX C: Distribution Generator Application Form

Please ensure the completeness of the required information below and include the appropriate application fee:

1. COMPANY NAME:

1a. COMPANY ADDRESS:

2. CONTACT INFORMATION:

2a. COMPANY/CONSULTANT NAME (if different from above)

2b. CONTACT NAME

2c. FAX NUMBER

2d. PHONE NUMBER

3. SERVICE LOCATION :

LSD : SURFACE LOCATION

LOT/BLOCK/PLAN

4. PROJECT DESCRIPTION :

--

NEW EXTENSION

UPGRADE EXISTING SERVICE

5. SUPPLY VOLTAGE :

--

277/480 VOLT, 3 PHASE, 4 WIRE

25 kV - 3 phase

6. ATCO ELECTRIC SUPPLIES STEP-UP TRANSFORMER

YES

NO

6a. ATCO ELECTRIC SUPPLIES BI-DIRECTIONAL METER

--

YES

--

NO

7. GENERATOR TYPE

--

SYNCHRONOUS

INDUCTION

MICRO/LOAD FOLLOWING

8a. GENERATOR SIZE

--

kW

8b. GENERATING UNITS TO BE INSTALLED

--

(number)

8c. GENERATOR CONNECTION CONFIGURATION

DELTA

WYE

9d. GENERATOR TO SELL ALL ENERGY TO POWER POOL

--

YES

--

NO

9e. GENERATOR TO PROVIDE ENERGY TO ONSITE LOAD

--

YES

--

NO

10. ANTICIPATED SERVICE LIFE :

--

5 YEARS

15 YEARS

10 YEARS

OTHER

11. ONSITE LOAD

12. ESTIMATE REQUIRED DATE :

13. REQUESTED INSERVICE DATE:

14. REQUIRED DOCUMENTS :

EXISTING		NEW		TOTAL
	kw		kw	

- 1. SURVEY PLAN Required
- 2. ELECTRICAL DRAWINGS
- 3. SITE PLAN SHOWING ARRANGEMENT OF MAJOR EQUIPMENT
- 4. PLOT PLAN

14. COMMENTS - Special requirements (underground costs, land owner concerns)

APPENDIX D: Micro-Generation Application Form

Form A – Micro-Generation (MG) Notice of Application ATCO Electric Limited

Please check one of the following boxes :

- Mini-MG - Inverter-based - 10 kW and smaller (Please refer to the Application Guide, www.auc.ab.ca, for clarification)
 Small MG - From 0 kW to 180 kW (Note: For small MG, please fill in fields denoted with *)
 Large MG - Greater than 180 kW and less than 1 MW (Note: For large MG, please fill in fields denoted with **)

APPLICANT IDENTIFICATION			
Name:		** Company Name:	
		** Business Associate Code:	
Address:		City:	
Province:	Postal code:	Phone:	Fax:
e-mail:		Preferred method of contact: e-mail <input type="checkbox"/> mail <input type="checkbox"/> Fax <input type="checkbox"/>	
Consultant Name:		Consultant Phone:	
Consultant Address/City/Province/Postal Code:			
Other Interested Parties:			
PROJECT DESCRIPTION			
Legal Land Description:		Site ID:	
Service Address:		Retailer Name:	
Have you notified your retailer about your MG project? Yes <input type="checkbox"/> No <input type="checkbox"/>			
Generator Type: Solar <input type="checkbox"/> Wind <input type="checkbox"/> Hydro <input type="checkbox"/> Biomass <input type="checkbox"/> Fuel cell <input type="checkbox"/> Other <input type="checkbox"/> Specify:			
Generator To Utility Interface: * Inverter <input type="checkbox"/> * Non-inverter <input type="checkbox"/> ** Induction <input type="checkbox"/> ** Synchronous <input type="checkbox"/>			
Generator Rated Capacity (kW):		** Demand (kVA):	Customer Annual Usage (kWh):
Voltage level of connection:		Phase: Single <input type="checkbox"/> Three <input type="checkbox"/>	
Is the energy produced to be used primarily by the generator owner? Yes <input type="checkbox"/> No <input type="checkbox"/>			
** Does your generator unit satisfy Anti-islanding requirements of CSA standard Q22.2 No.107.1? Yes <input type="checkbox"/> No <input type="checkbox"/>			
Does your generator meet the MG Regulation's Renewable/Alternative Energy Definition? Yes <input type="checkbox"/> No <input type="checkbox"/>			
Requested In Service Date (YY-MM-DD):			
SUPPORTING DOCUMENTS ATTACHED:			
Electric single-line diagram: Yes <input type="checkbox"/> No <input type="checkbox"/>		Site Plan: Yes <input type="checkbox"/> No <input type="checkbox"/>	
Has an Electrical Permit been obtained? Yes <input type="checkbox"/> Not yet <input type="checkbox"/>			
Have you met all applicable municipal and zoning requirements? Yes <input type="checkbox"/> No <input type="checkbox"/>			
Applicant Signature:		Date Of Application:	
WIRE OWNER USE ONLY:			
Wire Owner's Application Reference #:		** ABSQ Asset ID:	
Received by:		Interconnection Line:	
Approval: Yes <input type="checkbox"/> No <input type="checkbox"/> -- Reason(s) for disapproval:			
Interconnection Agreement: Yes <input type="checkbox"/> No <input type="checkbox"/> Not Applicable <input type="checkbox"/>			
Meter type: Interval <input type="checkbox"/> Cumulative <input type="checkbox"/>		Substation Number:	
Meter Installed Date:			

When completed, mail the completed application form and all supporting documents to:

ATCO Electric Limited
c/o Commercial Department (MG)
10040 - 104th Street
Edmonton, Alberta
T5J 2V6

OR

ATCO Electric Limited
c/o Commercial Department (MG)
909 – 11 Avenue S.W.
Calgary, Alberta
T2R 1L8

FOR INFORMATION PURPOSES ONLY

APPENDIX E: Electric Service Agreement for Generating Customers

ELECTRIC SERVICE AGREEMENT for Generating Customers ("GC Agreement") made the Day of Month, Year

BETWEEN: **Customer Name** **Project #**
 Address
 City, Prov PC
 (hereinafter called the "Generating Customer")

- and -

ATCO ELECTRIC LTD., a body corporate with its Head Office in the City of Edmonton in the Province of Alberta ("ATCO Electric" or "Company")

WHEREAS for the purposes of this agreement, "Generating Customer" shall mean a Customer with on-site generating equipment that is interconnected with the Company's distribution facilities;

WHEREAS the Generating Customer has requested the Company to provide the facilities required to interconnect the Generating Customer's equipment to the Company's distribution system at a location known as:

Legal Location **Site ID# - 0010#####**

1. The Generating Customer and the Company agree as follows:

i. Initial Term (for DCD):	N/A
ii. Allowable Maximum Demand (based on production and consumption demand):	Consumption Demand - ## kW Production Demand - ## MW
iii. Minimum Distribution Contract Demand (per part (i)):	N/A
iv. Service Configuration (voltage/phase/# of wires):	# KV
v. Minimum Contract Charge (Idle Charge):	As per Applicable Price Schedule
vi. Applicable Price Schedule(s):	D32
vii. Capital Recovery Charges:	
(a) Incremental Interconnection Costs	Amount dollars (\$##00)
(b) Payment Term (for facilities to interconnect generator)	N/A
(c) Incremental Operations and Maintenance Charges:	As defined in D32
(d) Incremental Administration and General Charges:	As defined in D32
viii. Special Arrangements	

2. The Generating Customer shall pay to the Company all ongoing Operating and Maintenance and Administration and General charges (the "Charges") associated with the facilities provided by the Company to interconnect each generator to the Company's distribution system. The Charges will be calculated in accordance with the Terms and Conditions. If the Generating Customer has multiple generators at the Said Location, each generator will be individually metered (covered under separate agreements) and the Charges will be divided and billed to each generator service. In the event the Generating Customer adds or removes a generator at the Said Location, the Company, in its sole discretion, may modify the interconnection facilities and/or the Charges and divide and bill the ensuring Charges to the remaining generator services. The Generating Customer shall give the Company 30 days written notice prior to adding or removing generators at the Said Location.

3. This GC Agreement is subject to the ATCO Electric Ltd. – Terms and Conditions for Distribution Service Connections ("Terms and Conditions"), as amended from time to time, which are approved by the Alberta Utilities Commission ("AUC").
4. The service provided hereunder is provided for the Generating Customer's use only at the said location and the Generating Customer shall not permit any other person to use such service.
5. The Generating Customer acknowledges that it has reviewed and understands these Terms and Conditions and agrees to be bound by them in all transactions with ATCO Electric.
6. The Generating Customer acknowledges that it has been offered a copy of ATCO Electric's Technical Guideline for Interconnection of Generators to Distribution Systems and agrees to follow the requirements, policies and business practices detailed therein required to interconnect generating equipment to the Company's distribution facilities.
7. The Generating Customer acknowledges that it has been offered a copy of ATCO Electric's Customer Guide to New Extensions and is aware of the policies and business practices of the Company detailed therein required to build distribution system extensions.
8. The Generating Customer acknowledges that it has submitted to the Company a fully completed and executed Operating Agreement and agrees to be bound by the provisions stated therein.
9. No person, whether an employee or agent of ATCO Electric or otherwise, can agree to change, alter, vary or waive any provision of the Terms and Conditions without the express approval of the AUC.
10. This GC Agreement shall be effective on the date service is first made available and thereafter shall remain in effect until terminated by either party in accordance with Article 15, as applicable, of the Terms and Conditions.
11. This GC Agreement is subject to all applicable legislation, including the *Electric Utilities Act* and the Regulations made thereunder, and all applicable orders, rulings, regulations and decisions of the AUC or any other regulatory authority having jurisdiction over the Company or the matters addressed herein.
12. This GC Agreement shall enure to the benefit of and be binding and enforceable by the parties hereto and their respective executors, administrators, successors and, where permitted, assigns.
13. If any provision of this GC Agreement, or the application thereof, is to any extent held invalid or unenforceable, the remainder of this GC Agreement and the application thereof, other than those provisions which have been held invalid or unenforceable, shall not be affected and shall continue in full force and effect and shall be enforceable to the fullest extent permitted by law or in equity.
14. Contacts or Notices required with respect to this GC Agreement shall be directed as follows:

ATCO Electric Ltd.,

10035 – 105 Street, Edmonton, Alberta, T5J 2V6

Attn: Supervisor, Department Name

IN WITNESS WHEREOF the Parties have executed this GC Agreement as of the day first above mentioned.

Customer Name

ATCO ELECTRIC LTD.

Per: _____

Per: _____

Name: _____

Name: _____

Title: _____

Title: _____