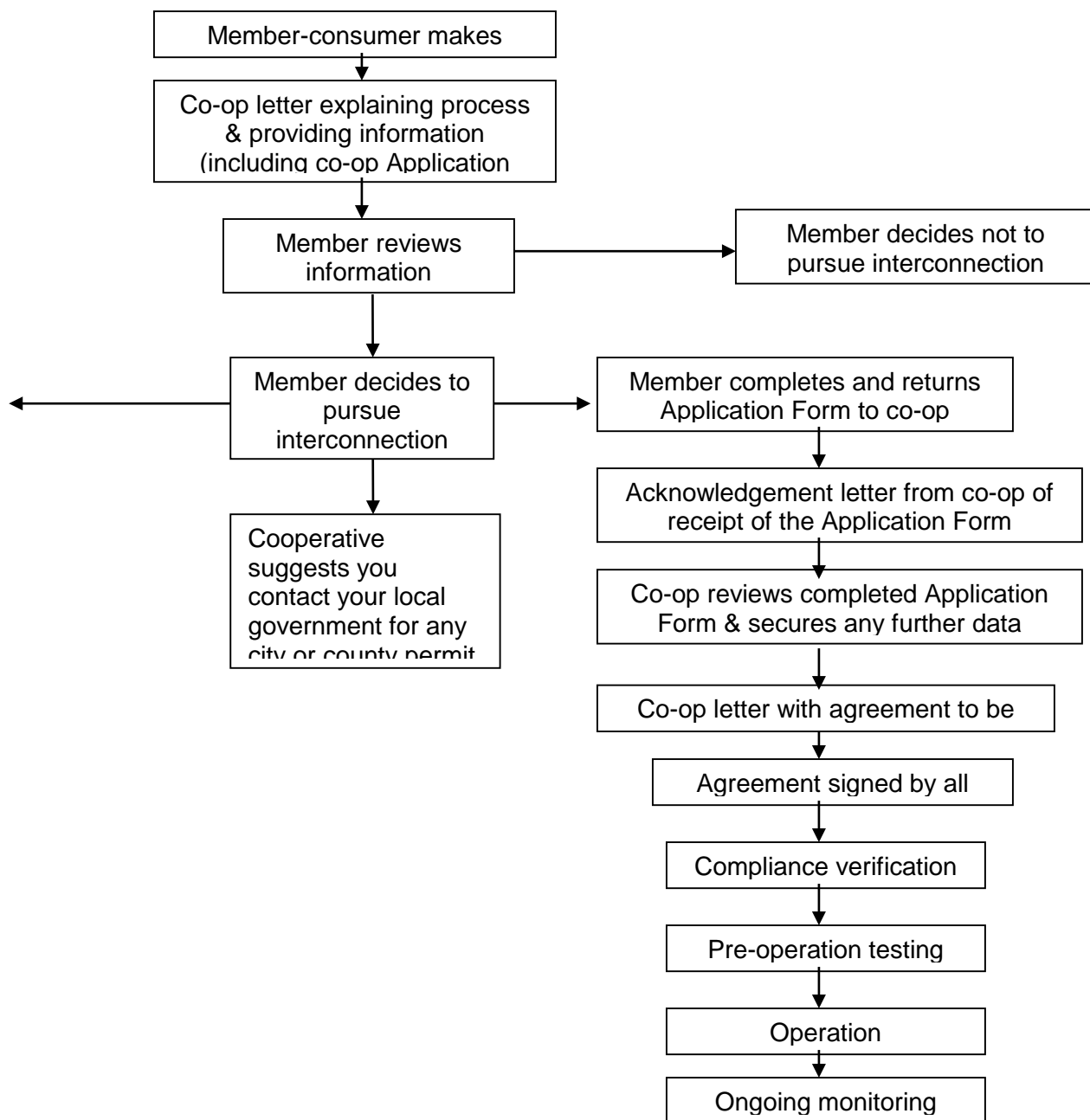


Interconnection Process for Customer-Owned Generation (QFs)



EASTERN IOWA LIGHT & POWER COOPERATIVE

Application for Operation of Customer-Owned Generation

This application for AEP-4 should be completed as soon as possible and returned to the Cooperative's Division Manager of Member Service along with a \$50 application fee in order to begin processing the request.

INFORMATION: *This application is used by the Cooperative to determine the required equipment configuration for the Customer interface. Every effort should be made to supply as much information as possible.*

PART 1 OWNER/APPLICANT INFORMATION

Company: _____

Mailing Address: _____

City: _____ County: _____ State: _____ Zip Code: _____

Phone Number: _____ Representative: _____

PROJECT DESIGN/ENGINEERING (ARCHITECT) (as applicable)

Company: _____

Mailing Address: _____

City: _____ County: _____ State: _____ Zip Code: _____

Phone Number: _____ Representative: _____

ELECTRICAL CONTRACTOR (as applicable)

Company: _____

Mailing Address: _____

City: _____ County: _____ State: _____ Zip Code: _____

Phone Number: _____ Representative: _____

TYPE OF GENERATOR (as applicable)

Photovoltaic _____ Wind _____ Microturbine _____

Diesel Engine _____ Gas Engine _____ Turbine _____

Other _____

ESTIMATED LOAD, GENERATOR RATING AND MODE OF OPERATION INFORMATION

The following information will be used to help properly design the Cooperative customer interconnection. This information is not intended as a commitment or contract for billing purposes.

Total Site Load _____ (kW)
Residential _____ Commercial _____ Industrial _____
Generator Rating _____ (kW) Annual Estimated Generation _____ (kWh)

Mode of Operation

Isolated _____ Paralleling _____ Power Export _____

DESCRIPTION OF PROPOSED INSTALLATION AND OPERATION

Give a general description of the proposed installation, including a detailed description of its planned location and when you plan to operate the generator.

PART 2

(Complete all applicable items. Copy this page as required for additional generators)

SYNCHRONOUS GENERATOR DATA

Unit Number: _____ Total number of units with listed specifications on site: _____
Manufacturer: _____
Type: _____ Date of manufacture: _____
Serial Number (each): _____
Phases: Single Three R.P.M.: _____ Frequency (Hz): _____
Rated Output (for one unit): _____ Kilowatt _____ Kilovolt-Ampere
Rated Power Factor (%): _____ Rated Voltage (Volts): _____ Rated Amperes: _____
Field Volts: _____ Field Amps: _____ Motoring power (kW): _____
Synchronous Reactance (Xd): _____ % on _____ KVA base
Transient Reactance (X'd): _____ % on _____ KVA base
Subtransient Reactance (X''d): _____ % on _____ KVA base
Negative Sequence Reactance (Xs): _____ % on _____ KVA base
Zero Sequence Reactance (Xo): _____ % on _____ KVA base
Neutral Grounding Resistor (if applicable): _____

I₂²t or K (heating time constant): _____
Additional information: _____

INDUCTION GENERATOR DATA

Rotor Resistance (Rr): _____ ohms Stator Resistance (Rs): _____ ohms
Rotor Reactance (Xr): _____ ohms Stator Reactance (Xs): _____ ohms
Magnetizing Reactance (Xm): _____ ohms Short Circuit Reactance (Xd''): _____ ohms
Design letter: _____ Frame Size: _____
Exciting Current: _____ Temp Rise (deg C°): _____
Reactive Power Required: _____ Vars (no load), _____ Vars (full load)
Additional information: _____

PRIME MOVER (Complete all applicable items)

Unit Number: _____ Type: _____
Manufacturer: _____
Serial Number: _____ Date of manufacturer: _____
H.P. Rated: _____ H.P. Max.: _____ Inertia Constant: _____ lb.-ft.²
Energy Source (hydro, steam, wind, etc.) _____

.....

GENERATOR TRANSFORMER (Complete all applicable items)

TRANSFORMER (between generator and utility system)
Generator unit number: _____ Date of manufacturer: _____
Manufacturer: _____
Serial Number: _____
High Voltage: _____ KV, Connection: delta wye, Neutral solidly grounded? _____
Low Voltage: _____ KV, Connection: delta wye, Neutral solidly g rounded? _____
Transformer Impedance(Z): _____ % on _____ KVA base.
Transformer Resistance (R): _____ % on _____ KVA base.
Transformer Reactance (X): _____ % on _____ KVA base.
Neutral Grounding Resistor (if applicable): _____

INVERTER DATA (if applicable)

Manufacturer: _____ Model: _____
Rated Power Factor (%): _____ Rated Voltage (Volts): _____ Rated Amperes: _____
Inverter Type (ferroresonant, step, pulse-width modulation, etc): _____

Type commutation: forced line
Harmonic Distortion: Maximum Single Harmonic (%) _____
 Maximum Total Harmonic (%) _____

Note: Attach all available calculations, test reports, and oscillographic prints showing inverter output voltage and current waveforms.

POWER CIRCUIT BREAKER (if applicable)

Manufacturer: _____ Model: _____
 Rated Voltage (*kilovolts*): _____ Rated ampacity (*Amperes*) _____
Interrupting rating (Amperes): _____ BIL Rating: _____
 Interrupting medium / insulating medium (ex. Vacuum, gas, oil) _____ / _____
 Control Voltage (Closing): _____ (Volts) AC DC
 Control Voltage (Tripping): _____ (Volts) AC DC Battery Charged Capacitor
 Close energy: Spring Motor Hydraulic Pneumatic Other: _____
 Trip energy: Spring Motor Hydraulic Pneumatic Other: _____
 Bushing Current Transformers: _____ (Max. ratio) Relay Accuracy Class: _____
 Multi ratio? No Yes: (Available taps) _____

ADDITIONAL INFORMATION

In addition to the items listed above, please attach a detailed one-line diagram of the proposed facility, all applicable elementary diagrams, major equipment, (generators, transformers, inverters, circuit breakers, protective relays, etc.) specifications, test reports, etc., and any other applicable drawings or documents necessary for the proper design of the interconnection. Also describe the project's planned operating mode (e.g., combined heat and power, peak shaving, etc.), and its address or grid coordinates.

END OF PART 2

SIGN OFF AREA

The customer agrees to provide the Cooperative with any additional information required to complete the interconnection. The customer shall operate their equipment within the guidelines set forth by the cooperative.

Applicant

Date

ELECTRIC COOPERATIVE CONTACT FOR APPLICATION SUBMISSION AND FOR MORE INFORMATION:

Cooperative contact: **Don Roth**
 Title: **Division Manager Member Services**
 Address: **PO Box 3003**
Wilton, IA 52778-3003
 Phone: **1-800-728-1242**
 Fax: **563-732-3224**
 e-mail: **don.roth@easterniowa.com**

OPTIONAL AGREEMENT FOR ELECTRIC SERVICE (AEP-4)

**FOR QUALIFYING CO-GENERATION AND/OR
SMALL POWER PRODUCTION FACILITIES**

THIS AGREEMENT, made and entered into this _____ day of _____, 20___, by and between Eastern Iowa Light and Power Cooperative, an Iowa cooperative corporation with its principal place of business in Wilton, Iowa (“Cooperative”) and _____, an individual residing in _____, Iowa (“Member-Consumer”);

WITNESSETH:

WHEREAS, Cooperative is a public utility under Chapter 478 of the Code of Iowa (2001) and provides electric utility service at retail to member-consumers in its assigned service area; and,

WHEREAS, Member-Consumer is a member of Cooperative and purchases electric power and energy from Cooperative; and,

WHEREAS, Cooperative is a member of Central Iowa Power Cooperative (“CIPCO”) and obtains all of its electric power and energy from CIPCO pursuant to the terms and conditions of a wholesale power contract between Cooperative and CIPCO; and,

WHEREAS, Member-Consumer owns and operates a qualifying co-generator or small power production facility (“QF”) under the Public Utility Regulatory Policies Act of 1978 (“PURPA”), and desires to purchase from Cooperative emergency and backup electric utility service, and to interconnect with the electric distribution system of Cooperative in order to do so; and,

WHEREAS, the Cooperative and Member-Consumer desire to set forth in this Agreement the terms and conditions pursuant to which said purchases, sales and interconnection shall be made;

IT IS, THEREFORE, IN CONSIDERATION OF THE MUTUAL CONVENANTS
HEREINAFTER SET FORTH, AGREED BY AND BETWEEN THE PARTIES AS
FOLLOWS:

Electric Service Provided to Member

1. Cooperative shall furnish, sell and deliver to Member-Consumer, and Member-Consumer shall purchase from Cooperative all of the electric power and energy which Member-Consumer may need at the location described in Exhibit “A”, attached hereto and by this reference made a part hereof, subject to the remaining provisions of this Agreement.

2. Electrical service provided by Cooperative shall be alternating current, single phase, 60 cycles, 120/240 volts, or three phase, 60 cycles, 120/208 or 277/480 volts:
3. Member-Consumer shall not use the electric power and energy furnished pursuant to this Agreement as an auxiliary or supplement to any other source of electric power and energy, other than that generated by the Member-Consumer's QF located on its premises, and shall not resell electric power and energy purchased hereunder.
4. Member-Consumer shall pay Cooperative for service at the rates and upon the terms and conditions set forth in the Cooperative's applicable rate schedule, which schedule is attached hereto and by this reference made a part hereof, for the first six (6) months of the term of this Agreement. Thereafter, Cooperative may establish a qualifying facility backup rate based upon the unique characteristics of the Member-Consumer's load profile, based on an analysis of metered data in a cost of service study, and said backup rate shall apply for the remainder of the term of this Agreement, except as adjusted pursuant to section 8 of this Agreement.
5. The initial billing period shall commence when Member-Consumer begins receiving electric power and energy from Cooperative, or thirty (30) days after the date Cooperative notifies Member-Consumer in writing that service is available, whichever shall first occur.
6. Bills for service hereunder shall be paid at the office of the Cooperative in Wilton, Iowa. Such payment shall be due on the 5th day of each month for service furnished during the preceding monthly billing period. In the event Member-Consumer fails to make payment of any bill when due, Cooperative may discontinue service to Member-Consumer upon twelve (12) days' notice, excluding Saturdays, Sundays, or legal holidays, of its intention to do so. Discontinuance of service shall not relieve Member-Consumer of any of its obligations under this Agreement.
7. Member-Consumer shall become and remain a member of Cooperative during the initial term of this Agreement and any extensions thereof, shall pay the Cooperative's membership fee and shall be subject to the terms and conditions of the Cooperative's Articles of Incorporation, Bylaws, rules, and regulations.
8. The Cooperative shall use reasonable diligence to provide a constant and uninterrupted supply of electric power and energy. If the supply of electric power and energy shall fail or be interrupted, or become defective through act of God, governmental authority, action of elements, public enemy, accident, strikes, labor disputes, required maintenance work, inability to secure right-of-way, or any other cause beyond the reasonable control of the Cooperative, the Cooperative shall not be liable therefore or for damages caused thereby.
9. In the event the rate paid by the Cooperative for the purchase of electric power and Energy from its power supplier is modified, or in the event of changes in Cooperative's cost of labor, materials, or other items affecting its costs of operation, Cooperative may change the rate for service provided under this Agreement. In said event, Cooperative shall provide Member-Consumer with ten

(10) days' written notice of such rate modification, which modification shall become effective 10 days following the giving of said notice.

Interconnection Requirements

10. All facilities shall meet certain requirements to be eligible for interconnection pursuant to the terms and conditions of this section. Permission to interconnect with the Cooperative electric system is contingent upon the following conditions:
 - a. The member-consumer shall comply with acceptable standards for interconnection, safety, and operating reliability. Acceptable standards include the most current revisions of the following in order to be eligible for interconnection to the Cooperative's electric system:
 1. Standard for Interconnecting Distributed Resources with Electric Power Systems, ANSI/IEEE Standard 1547-2003. For guidance in applying IEEE Standard 1547, the Cooperative may refer to:
 - (1) IEEE Recommended Practices and Requirements for Harmonic Control in Electric Power Systems – IEEE Standard 519-1992; and
 - (2) IEC/TR3 61000-3-7 Assessment of emission limits for fluctuating in MV and HV power systems.
 2. Iowa Electrical Safety Code, as defined in 199-Chapter 25
 3. National Electrical Code, ANSI/NFPA 70-
 - b. The member-consumer facility shall be equipped with automatic disconnection upon loss of electric voltage supplied by the Cooperative.
 - c. The member-consumer shall furnish and install an overcurrent device on the facility to automatically disconnect the facility at all currents that exceed the full-load current rating of the facility.

The member-consumer shall furnish the Cooperative with sufficient data in order to verify that all conditions in Parts a, b and c above are met. Cooperative approval is required before interconnection is permitted.

11. The interconnection shall be provided with a switch that provides a visible break or opening. The switch shall be capable of being padlocked in the open position. Both the operator of the qualifying facility (or qualifying alternate energy production facility, or qualifying small hydro facility) and the Cooperative shall have access to the interconnection switch at all times.
12. Those facilities that produce a terminal voltage prior to the closure of the interconnection shall be provided with synchronism-check devices to prevent closure of the interconnection under conditions other than reasonable degree of synchronization between the voltages on each side of the interconnection switch.

13. The member-consumer facility shall be subject to disconnection without notice by the Cooperative in the event the facility causes unacceptable safety, voltage, or frequency conditions, service interruption, or communication interference.
14. The member-consumer will regularly inspect, maintain, and service the facility for safe and reliable operation and maintain a record or log, available for inspection by the Cooperative, showing when the facility is shut down for repairs or maintenance, the maintenance or repair completed, and when the facility is placed back in service. If requested by the Cooperative, the member-consumer shall submit to the Cooperative a maintenance schedule, prior to October 1, of each year, for the following calendar year.
15. The member-consumer shall agree to insure and indemnify the Cooperative and its representatives against liability for any injuries or damages caused by the operation of the member-consumer's equipment or by any failure of the member-consumer to maintain such equipment in satisfactory or safe operating condition. The member-consumer shall maintain a home owners insurance policy with a minimum of \$300,000 and will arrange for and maintain liability insurance or other proof of financial responsibility will be required by the Cooperative and shall be approved by the Cooperative prior to interconnection. Failure to maintain required insurance or proof of financial responsibility shall be cause for disconnection.
16. The member-consumer shall reimburse the Cooperative for costs incurred by the Cooperative for all costs of connection, switching, metering, transmission, distribution, safety provisions and administrative costs directly related to the installation and maintenance of the physical facilities necessary to permit interconnected operations with a qualifying facility (or qualifying alternate energy production facilities, or qualifying small hydro facilities), to the extent the costs are in excess of the corresponding costs which the Cooperative would have incurred if it had not engaged in interconnected operations, but instead generated an equivalent amount of electric energy itself or purchased an equivalent amount of electric energy or capacity from other sources. Interconnection costs do not include any costs included in the calculation of avoided costs.
17. The member-consumer shall permit Cooperative representatives to enter upon member-consumer's property at any reasonable time for the purpose of inspecting or testing member-consumer's equipment, facilities or apparatus and the accuracy of the Cooperative's metering equipment, but such inspections shall not relieve the member-consumer of the obligation to maintain the member-consumer's facilities in satisfactory operating conditions. The Cooperative may charge the direct expense of such inspecting or testing of the member-consumer's equipment, facilities or apparatus to the member-consumer, unless member-consumer can demonstrate the inspecting and testing was not necessary.
18. The member-consumer shall be responsible for the costs of installation and maintenance of power factor correction capacitors required to maintain the equivalent of an average power factor of 90% (lagging) at the interconnection.
19. The member-consumer's electric generating equipment shall be designed, operated and maintained in such manner that it does not adversely affect the Cooperative's voltage wave form.

20. The Cooperative will meter the QF to obtain billing data and to fulfill its recording requirements. Member-Consumer shall pay all costs associated with the installation of metering equipment necessary to measure the sale of power and energy to Member-Consumer. The Cooperative shall have the right to install such additional metering equipment as it deems necessary for the collection of data for research purposes, which metering will be furnished and paid for by the Cooperative. Meters shall be read by the Cooperative.
21. Cooperative reserves the right to require Member-Consumer to provide at its expense suitable apparatus for filtering to avoid interference with telephone, radio, television, or other electronic signal reception caused by electrical equipment and apparatus on Member-Consumer's premises. Failure of Member-Consumer to provide filtering when requested by the Cooperative shall be grounds for discontinuation of service.
22. Member-Consumer shall comply with all applicable laws, rules and regulations governing the operation of its QF.
23. In order to provide adequate safety to Cooperative's employees, Member-Consumer shall furnish and install an Underwriter's Laboratory (UL) listed manual disconnect switch between Member-Consumer's QF and the Cooperative's system in order that the QF may be positively disconnected from Cooperative's system. The location of the switch shall be determined and approved by the Cooperative and shall be housed in an approved enclosure which may be secured with a padlock or other locking device. Cooperative shall have access to the switch. Cooperative shall have the option of a service transformer disconnect in lieu of the Member-Consumer furnished disconnect switch.
24. Operation of the QF must not cause any reduction in the quality of service provided to other Member-Consumers or interfere with the operation of the Cooperative's system. Member-Consumer shall take such corrective action as may be necessary in order to eliminate such condition, and shall reimburse the Cooperative for any costs incurred by the Cooperative in correcting or eliminating such conditions.
25. The electrical characteristics of the QF shall conform with standards established by the Cooperative, including, but not limited to, voltage, current, frequency, harmonics, and automatic synchronization.
26. Cooperative reserves the right to open the disconnect switch, thereby isolating Member-Consumer's QF, without prior notice to Member-Consumer, for any of the following reasons:
 - a. System emergency and/or maintenance operations which require such action.
 - b. The existence of potentially hazard conditions relating to the QF.
 - c. Interference with the quality of service provided to other Member-Consumers, and/or the operation of the Cooperative's system, caused by or resulting from the operation of the QF.

C. Purchases from Member

1. Agreement to Purchase. Cooperative agrees to purchase from Member such excess capacity as may be generated by Member's facility and which Member desires to sell to Cooperative. Cooperative is interconnected with its wholesale power supplier and the purchase obligations of Cooperative may be assumed by Cooperative's wholesale power supplier, CIPCO.
2. Rates.

QF's with design capacity of 100kW or less

Payment for purchases from the member-consumer pursuant to this contract shall be as follows:

The price(s) for purchases from qualifying facility (as defined above) and with a design capacity of 20 kilowatts or less are available by contacting the Cooperative. These prices will be consistent with 18 CFR 292.304.

QF's greater than 100 kW

The price(s) for purchases from qualifying facilities (as defined above) and with a design capacity above 20 kilowatts are available on a negotiated case-by-case basis with the Cooperative.

D. Wheeling Option

Cooperative may provide a wheeling service to a facility interconnected to is electric transmission system. Any charges for the wheeling of power will be determined by the Cooperative and in accordance with any applicable regulations. In addition, Cooperative reserves the right to refuse to wheel power where its existing facilities do not have adequate capacity and the member-consumer refuses to pay the cost to upgrade those facilities. If a qualifying alternate energy production or small hydro facility agrees, the Cooperative which would otherwise be obligated to purchase electricity from such facility may transmit the electricity to any other electric utility, or to a separate location owned or occupied by the owners of the facility. Any electric utility to which such electricity is transmitted shall purchase such electricity under this subpart as if the facility were supplying electricity directly to such electric utility. The price for purchase by the electric utility to which such electricity is transmitted shall be adjusted downward according to the mutual agreement of the transmitting and receiving utilities, to reflect any wheeling line losses and shall not include any charges for transmission.

E. Miscellaneous

1. This Agreement shall be subject to all federal and state laws and regulations to allocation of power.
2. This Agreement shall become effective on the date and year first above written, and shall remain in effect for a term of two (2) years from and after the commencement of the initial billing period. This agreement shall thereafter continue for successive terms of one (1) year each, unless terminated by either party giving the other not less than three (3) months' written notice of its desire to terminate this Agreement.
3. This Agreement shall be binding upon the parties, and upon their respective successors and assigns.
4. This Agreement shall be subject to the approval of the Administrator of Rural Utilities Service (RUS).

IN WITNESS WHEREOF, the parties hereto have executed this Agreement on the day and year first above written.

EASTERN IOWA LIGHT AND
POWER COOPERATIVE

By: _____
CEO

MEMBER CONSUMER

By: _____
Title

ELECTRIC TARIFF	<u>1st</u>	Revised	Sheet No. <u>110.2</u>
FILED WITH IUB	Cancels	<u>Original</u>	Sheet No. _____

26.22 Optional Co-Generation, Small Power and Alternate Energy Producer Buy Back Rate (AEP-4)

Availability

Available to all member-consumers with an approved Qualifying Co-Generation, Small Power, or Alternate Energy Production facility as described in Section 25.2 of this tariff and with a design capacity greater than 20 KW or not appropriately sized for their KW demand.

Type of Service

Single phase, or multi phase, 60 cycle, service.

Buy Back Rate

The Cooperative will purchase any electric energy produced by the facility and not used by the member-consumer at that service location. Any energy the member-consumer purchases from the Cooperative shall be on the appropriate tariff rate for a similar load size and characteristic. The member-consumer is encouraged to use as much of their generation as possible to reduce their purchases from the Cooperative. The meter will record KWH delivered to the member separately from those delivered to the Cooperative. All energy delivered to the Cooperative will be registered and credit will be issued for such energy on the billing statement.

The Cooperative purchases all of its power requirements from its wholesale power supplier, Central Iowa Power Cooperative (CIPCO). All energy and capacity delivered to the Cooperative's electric system during the off peak time block will be purchased at CIPCO's avoided costs. All excess energy and capacity delivered to the Cooperative's electric system during the on peak time block will be purchased at CIPCO's avoided cost plus the difference between the on peak and off peak rate. The avoided cost is the incremental cost to CIPCO of electric energy and capacity, which, but for the purchase from the Cooperative's member-consumer's generating facility, CIPCO would generate from its own facilities or purchase from the wholesale energy market. CIPCO shall therefore be responsible for calculating its' avoided costs and providing that cost information to the Cooperative.

Energy Credit

The energy credit is \$0.03309 per KWH generated off peak and \$.11009 for all KWH's generated on peak as of the effective date of this tariff subject to change as CIPCO costs change. There is no capacity credit available. Any billing or credit for energy shall be determined by a non-detented meter.

Time of Use Periods:

On Peak – 4:00 pm to 9:00 pm every day
Off Peak – All remaining hours

Issued: October 27, 2016

Effective: December 1, 2016

Issued by Nancy Varner
President

ELECTRIC TARIFF _____ Revised

Sheet No. 110.3

FILED WITH IUB Cancels _____

Sheet No. _____

26.22 Optional Co-Generation, Small Power and Alternate Energy Producer Buy Back Rate (AEP-4)

Restrictions

The Cooperative reserves the right to limit the capacity of any service when, in its judgment, such service will impair the service to other member-consumers or such service shall exceed the capacity of the Cooperative's facilities.

Issued: October 27, 2016

Effective: December 1, 2016

Issued by Nancy Varner
President