

COUNCIL ACTION FORM

SUBJECT: APPROVAL OF INTERCONNECTION AGREEMENT AND NET METERING RIDER TO ALLOW SMALL GENERATORS TO CONNECT TO ELECTRIC SERVICES' SYSTEM.

BACKGROUND:

Customers have been interested in green energy for some time now. Over the past year, numerous customers have called to inquire whether Electric Services has a policy dealing with the interconnection of small (10 KW and less) green electricity generators to its system.

Electric Services staff has investigated the issue and has developed an Interconnection Agreement which covers the items necessary to safely isolate the customer-owned generator from the City's electric distribution system, and a Net Metering Rider which covers how the customers will be metered and billed for their net of electricity each month. Copies of the Interconnection Agreement and the Net Metering Rider are included.

ALTERNATIVES:

1. Approve the Interconnection Agreement and Net Metering Rider, and allow small customer generators to connect to Electric Services system.
2. Disapprove the Interconnection Agreement and Net Metering Rider, and disallow small customer generators to connect to Electric Services system.

MANAGER'S RECOMMENDED ACTION:

It is the recommendation of the City Manager that the City Council adopt Alternative #1, and approve the Interconnection Agreement and Net Metering Rider to allow small generators to attach to the Ames Electric Services System. By approving these documents, individuals who invest in a home solar unit or other small generating system may have their electric bills reduced by the amount of power which they are able to produce. It should be noted that the City is not purchasing power from small producers, but merely crediting their bills for the power which they produce and avoid Electric Services having to provide.

DRAFT



Electric Services

**Interconnection Agreement
for
Renewable Energy
Net Metering
10 kW and Lower**



Electric Services

**Interconnection Agreement for
Renewable Energy Net Metering
Between
City of Ames Electric Services
And**

(Customer)

This Interconnection Agreement (Agreement) for Renewable Energy Net Metering is entered into on _____, 20__ (Effective Date) by and between _____ (Customer), _____ (address), and City of Ames Electric Services, a Municipal Utility operating in the State of Iowa.

RECITALS

A. Renewable Energy Net Metering Service is available to City of Ames Electric Services' Customers that are supplied electric service by City of Ames Electric Services under all rate schedules and that own, operate and maintain an eligible Renewable Energy System in parallel with the City of Ames Electric Services electric system.

B. The Customer owns an eligible Renewable Energy System and will install and maintain it in compliance with all applicable National Electric Code requirements, building codes, and City of Ames Electric Services Electric Service Rules.

C. The Customer desires to connect the eligible Renewable Energy System to City of Ames Electric Services electric system.

D. City of Ames Electric Services has mechanisms in place through its Electric Tariff and Electric Service Rules to accommodate the Customer's request.

NOW, THEREFORE, in consideration of the mutual promises and covenants contained within this Agreement, the parties agree as follows:

AGREEMENT

1. SYSTEM DEFINED

The Customer's eligible Renewable Energy System is a self-contained electric generation system comprising: direct current disconnect apparatus, inverters for the conversion of direct current to alternating current, alternating current disconnect/lockout, over-current protective device, and all other related electrical equipment upstream of the over-current protective device (all such equipment described as the "System" within this Agreement). The System begins and continues up-stream from the over-current protective device on the Customer's premises. (an additional recording meter is not required for all City of Ames Electric Services rate schedules).

2. TERM AND TERMINATION

2.1 The term of this Agreement begins on the Effective Date (regardless of the date that the Customer is authorized to interconnect the System pursuant to Section 5 below) and continues for five (5) consecutive 12-month periods, and then will renew for additional 12-month periods continuing until either party chooses to terminate the agreement.

2.2 The Customer may terminate this Agreement at any time by providing 30 days written notice of termination to City of Ames Electric Services. The City of Ames Electric Services may terminate this Agreement at any time by providing 30 days written notice of termination to the Customer.

2.3 City of Ames Electric Services may terminate this Agreement at any time for any violation of this Agreement by providing 5 days written notice to the Customer. As provided in Section 3 below, this Agreement is at all times subject to the terms of, changes to, and revisions to, City of Ames Electric Services rate structure and Electric Service Rules and other related regulatory authorizations.

2.4 This agreement shall automatically terminate on the 10th day following the sale or transfer of the Customer's premises. In the event of such sale or transfer the Customer shall notify the new buyer of this Interconnection Agreement and the new buyer shall promptly sign the City of Ames Electric Services forms to reaffirm this Agreement. Failure of the buyer to reaffirm this Interconnection Agreement within ten days of the sale or transfer will allow City of Ames Electric Services to perform lock out procedures as provided herein. The right to reaffirm this Interconnection Agreement may not be withheld by City of Ames Electric Services unless the system fails to meet the requirements established in Section 4 of this agreement.

2.5 At the time of termination of this Agreement for any reason, City of Ames Electric Services will perform lock out procedures to disconnect the Customer's System from the City of Ames Electric Services' electric system.

3. TARIFF AND REGULATORY AUTHORITIES

3.1 Renewable Energy Net Metering Service is available to City of Ames Electric Services Customers that are supplied electric service by City of Ames Electric Services under all rate schedules and that own, operate and maintain an eligible Renewable Energy System in parallel with the City of Ames Electric Services electric system.

3.2 This Agreement is subject to: all present and future applicable laws, rules, regulations, certificates, decisions, orders and directives of the Ames City Council and all federal, state and local authorities having jurisdiction over the subject matter of this Agreement; and This Agreement will be deemed to include all such changes referred to in the initial sentence of this subsection, or any other changes that become effective by operation of law City Council resolution, without prejudice to the Customer's right to protest those changes.

4. INSTALLATION AND PERMITTING

4.1 The Customer and the System must comply with: 1) all applicable National Electric Code (NEC) requirements, including, but not limited to NEC Articles 690 and 705; 2) all building codes; and 3) all applicable Underwriters Laboratories (UL) requirements and standards. At its sole expense, the Customer must: 1) obtain all necessary electrical permit(s) for the installation of the System, and 2) obtain and maintain any governmental authorizations or permits that may be required for the operation of the System. The Customer must reimburse City of Ames Electric Services for any and all losses, damages, claims, penalties, or liability the City of Ames Electric Services incurs as a result of the Customer's failure to obtain or to maintain any governmental authorizations and permits that may be required for construction and operation of the Customer's System.

4.2 The Customer or its contractor must fill out Exhibit A and B and construct the System as specified in the attached Exhibit A.

4.3 A manual, lockable, load-break disconnect switch that provides a clear indication of the switch position must be available with the System at or near the Customer's main point of service from City of Ames Electric Services' electric system to provide a point of electrical separation between the Customer's System and City of Ames Electric Services' electric system. City of Ames Electric Services will coordinate and approve the location of the disconnect switch. The disconnect switch must be easily visible, mounted separately from the metering equipment, readily accessible to City of Ames Electric Services' personnel at all times, and capable of being locked in the open position with a City of Ames Electric Services' lock. City of Ames Electric Services may open the disconnect switch thereby isolating the Customer's System from the City of Ames Electric Services electric system for any reason that City of Ames Electric Services deems necessary (including, but not limited to, maintenance or emergency work, the System adversely affecting other customers of City of Ames Electric Services, failure of the System to comply with codes/regulations, the System creating hazardous or unsafe conditions, the Customer's failure to pay utility bills when due, failure to comply with UL Standard 1741 (*Standard for Static Inverters and Charge Controllers for Use in*

Photovoltaic Systems), or failure to comply with UL Standard 1703 (*Standard for Safety: Flat-Plate Photovoltaic Modules and Panels*).

4.4 All rate schedules within City of Ames Electric Services system do not require the second metering point for this level of renewable generation.

4.5 The System must comply with all Institute of Electrical and Electronics Engineers (IEEE) Standards 929-2000 (*Recommended Practice for Utility Interface of Photovoltaic Systems*), as of the Effective Date, for parallel operation with City of Ames Electric Services. The purpose of these IEEE Standards is to minimize custom engineering of many aspects of the interconnection. These standards allow installation in a manner that will allow the System to perform as expected and to be installed at a reasonable cost while not compromising safety or operational issues. All power quality parameters (that is, voltage, flicker, frequency, distortion) are specified at the point of common coupling (PCC) unless otherwise stated. In particular, the following requirements must be met:

4.5.2 Flicker – Any voltage flicker resulting from the connection of the inverter to City of Ames Electric Services' electric system at the PCC cannot exceed the limits defined by the maximum borderline of irritation curve identified in IEEE Std. 519-1992.

4.5.3 Frequency – the System must have a fixed frequency range of 59.3-60.5 Hz.

4.5.4 Waveform Distortion – the System must have low current-distortion levels to ensure that no adverse effects are caused to other equipment connected to City of Ames Electric Services' electric system. The System electrical output at the PCC must comply with Clause 10 of IEEE Std. 519-1992. The key requirement is that total harmonic distortion must be less than 5% of the fundamental frequency current at rated inverter output. Each individual harmonic is limited to the percentages listed in IEEE Std. 519-1992.

4.5.5 Power Factor – The System must operate at a power factor > 0.90 (leading or lagging) when output is greater than 10%.

4.5.6 Islanding Protection – The System must cease to energize the utility line when the inverter is subjected to islanding conditions. The Customer's System must immediately, completely and automatically disconnect from City of Ames Electric Services' electric system in the event of a fault on the Customer's System, a fault on City of Ames Electric Services' electric system or loss of source on City of Ames Electric Services' electric system. City of Ames Electric Services, at its own discretion and expense, may conduct periodic testing of anti-islanding.

4.6 The Customer's over-current protective device (Breaker) at the service panel must be dedicated and must be capable of interrupting the maximum available fault current. The Breaker shall be clearly marked to indicate power source and connection to City of Ames Electric Services' electric system. City of Ames Electric Services will provide and attach an additional label to the manual load-break disconnect switch, which is described in Subsection 4.3 above.

4.7 The Customer, at its own expense, must pay for any additional equipment required to connect the System to City of Ames Electric Services' electric system.

5. WRITTEN AUTHORIZATION REQUIRED TO CONNECT SYSTEM

5.1 **The Customer may not connect the System to the City of Ames Electric Services' electric system until:** 1) this Agreement has been executed by the parties, 2) the System has been tested, and 3) written authorization to connect the System, in a form substantially similar to the attached Exhibit C, has been given to the Customer by City of Ames Electric Services. City of Ames Electric Services may have representatives present at the initial testing of the Customer's System and may perform (at its own expense) whatever testing of the Customer's System that City of Ames Electric Services deems necessary. If City of Ames Electric Services does not complete the witness test within 20 business days from receipt of the Certificate of Completion the witness test is deemed waived. (See FERC Order No. 2006-B, Attachment 5, number 6). This waiver of a witness test enables the customer to operate its system in parallel with City of Ames Electric Services' system.

5.2 After written authorization to connect the System to City of Ames Electric Services' electric system has been given, the Customer shall make no changes or modifications in the System or of its mode of operation without the prior written approval of City of Ames Electric Services.

5.3 The extent of the initial testing will be determined at an earlier meeting between customer and City of Ames Electric Services and will stay in affect as long as the customer does not modify the system in any way as representative of Exhibit A.

6. LOCATION OF SYSTEM

The System will be installed at the Customer's premises located at in the physical location specified or depicted in the attached Exhibit A The Customer cannot relocate the System to another premises or physical location without the prior written approval of City of Ames Electric Services. In the event that such approval is given, any relocation and installation of the System will be at the Customer's sole expense.

7. NET METERING

The term "Net Metering" as used within this Agreement refers to the use of a single meter connected system (no second meter required). The Net process is accomplished on the customer's original point of metering.

8. RENEWABLE ENERGY CREDITS

The Customer expressly understands and agrees that all Environmental Attributes, including but not limited to, air quality credits, "Green tags," and renewable energy credits, that are created by the installation, existence and operation of the System shall belong to City of Ames Electric Services. City of Ames Electric Services may report or register ownership of the Environmental Attributes with any entity and may utilize those Environmental Attributes (or transfer them) in any manner.

9. ACCESS TO PREMISES

The Customer will allow access to its premises and to the System by City of Ames Electric Services personnel in accordance with the City of Ames Electric Services' Service Rules: (i) to inspect the Customer's System, (ii) to read and to replace meters; (iii) to open the load-break disconnect switch, and (iv) to disconnect the interconnection facilities at MP&W meter or transformer.

10. MAINTENANCE OF EQUIPMENT

At its sole expense, the Customer will maintain the System, including but not limited to, all over-current protective equipment, in a safe and prudent manner and in conformance with all applicable laws, codes and regulations, including, but not limited to, the requirements of Section 4 above. The Customer must maintain all records for such maintenance. These records must be available to City of Ames Electric Services for inspection at all reasonable times.

11. DISPUTE RESOLUTION

Should a dispute arise between the parties with regard to the Service provided under this Agreement, any such dispute may be reviewed and determined in accordance with the Dispute Resolution Procedure as provided in City of Ames Electric Services Tariff and Electric Service Rules, Utilities Rules and Regulations, or other related Municipal Codes.

12. SAFETY

The Customer agrees to install, to operate and to maintain the System in a safe and prudent manner and in conformance with all applicable laws, codes and regulations including, but not limited to, those contained within Section 4 above.

13. SEVERABILITY

If any provision of this Agreement is found to be illegal or unenforceable, then the remaining provisions of this Agreement will remain in full force and effect, and such term or provision will be deemed stricken for as long as it remains illegal or unenforceable.

14. SURVIVAL

The provisions of this Agreement with respect to indemnification and liability will survive the termination of this Agreement.

15. NOTICES AND OTHER COMMUNICATIONS

Except as otherwise expressly provided in this Agreement or as may be specified by the parties in writing, any notice or other communication required under this Agreement must be in writing and must be sent by registered or certified United-States mail, or by messenger, or by facsimile, or by other electronic means. Any such notice or other communication must be addressed as follows and, if so addressed, will be effective upon actual receipt.

If to Customer:

Name:

Title:

Address:

Phone:

Fax:

Email:

If to City of Ames Electric Services:

Name:

Title:

Address:

Phone:

Fax:

Email:

16. ENTIRE AGREEMENT

This Agreement, together with its attachments, constitutes the entire agreement between the parties and supersedes all previous written or oral communications, understandings, and agreements between the parties unless specifically stated otherwise within this Agreement. This Agreement may be amended only by a written agreement signed by both parties. Email and all other electronic (including voice) communications from City of Ames Electric Services in connection with this Agreement are for informational purposes only. No such communication is intended by City of Ames Electric Services to constitute either an electronic record or an electronic signature or to constitute any agreement by City of Ames Electric Services to conduct a transaction by electronic means. Any such intention or agreement is expressly disclaimed.

17. ACKNOWLEDGEMENTS REGARDING AGREEMENT

By signing below, the Customer acknowledges that it understands the terms of this Agreement and that the Customer may not connect the System to City of Ames Electric Services' electric system until the Customer has received written authorization to connect from City of Ames Electric Services. Within 20 business days after notice from the Customer that the System is ready for interconnection to the City of Ames Electric Services' electric system, City of Ames Electric Services will inspect the System and will provide a written authorization to connect the System or a statement that the System may not be interconnected because of non-compliance with this Agreement. (See FERC Order No. 2006-B, Attachment 5, number 6).

THE DULY AUTHORIZED REPRESENTATIVES of the parties have signed three originals of this Agreement.

CUSTOMER

Signature: _____

Printed Name: _____

Address: _____

Utilities Account #: _____

Date: _____

CITY OF AMES ELECTRIC SERVICES

Authorized Signature: _____

Printed Name: _____

Title: _____

Date: _____

Exhibit A

To the Interconnection Agreement for Renewable Energy Net Metering between
City of Ames Electric Services and _____, dated _____.

Insert description of System and attach drawing

Fill out application for parallel operations Exhibit B

(Not valid without Make, Model and Voltage of system being installed)

Exhibit B
**Application for Parallel Operation
With Utility Services**

Customer (Connecting Party):

Name: _____ Contact Person: _____
Address: _____ Phone: _____
_____ Account Number: _____
Permit Number: _____

Consulting Engineer or Contractor:

Name: _____ Contact Person: _____
Address: _____ Phone: _____

Equipment Information:

Item	Manufacturer	Model Number
_____	_____	_____
_____	_____	_____
_____	_____	_____

General Information:

Type: Synchronous Induction Inverter Other _____
Energy Source (Wind, Solar, Hydro) _____
Single Phase Three Phase

Rating: _____ kW
Rated Output: _____ A Rated Voltage: _____ Volts
Rated Frequency: _____ Hertz Rated Current: _____ Amps
Efficiency: _____ % Power Factor: _____
THD: _____ % Max Fault Current: _____ Amps

External disconnect is mandatory
Location _____

Meets all applicable Standards and Codes (IEEE, UL, NEC, etc.) Yes No
Estimated In-service date: _____

Customer Signature: _____ Title: _____ Date: _____
Contractor Signature: _____ Title: _____ Date: _____

Exhibit C

To the Interconnection Agreement for Renewable Energy Net Metering between
City of Ames Electric Services and _____, dated _____.

**Section A: Authorization. The System may be connected
to the City of Ames Electric Services system.**

The System has been inspected and tested and the Customer is authorized to connect the System to the City of Ames Electric Services electric system.

Signed by:

Printed Name:

Printed Title:

Date:

– OR –

**Section B: Non-Authorization. The System cannot be
connected to the City of Ames Electric Services' electric system.**

The System does not comply with the Interconnection Agreement for Renewable Energy Net Metering between City of Ames Electric Services and _____, dated _____ . Accordingly, the Customer **cannot connect** the System to the City of Ames Electric Services' electric system.

Signed by:

Printed Name:

Printed Title:

Date:

Application:**DRAFT**

This Rider is available to any retail customer receiving electric service under a City of Ames Electric Services rate schedule who owns and operates an on-site generating system powered by a renewable resource capable of producing not more than 10 kW of power, and who interconnects with the City of Ames Electric Services' electric system.

Renewable energy technology is any technology that exclusively relies on an energy source that is naturally regenerated over a short time and derived directly from the sun, indirectly from the sun, or from moving water, wind, or other natural movements and mechanisms of the environment.

Renewable energy technologies include those that rely on energy derived directly from the sun, on wind, geothermal, hydroelectric, wave, or tidal energy, or on biomass or biomass-based waste products, including landfill gas. A renewable energy technology does not rely on energy resources derived from fossil fuels, waste products from fossil fuels, or waste products from inorganic sources. This Rider applies to a customer-owned generating system that primarily offsets part or all of the customer's electric service provided by City of Ames Electric Services.

Conditions of Service:

1. All charges, character of service, and terms and conditions of the City of Ames Electric Services Rate Schedule under which the customer receives service apply except as expressly altered by this Rider.
2. The customer shall comply with the current City of Ames Electric Services' technical requirements for distributed generation interconnection for facilities under 10 kW and any revisions to the requirements.
3. The customer shall obtain approval from the City of Ames before the customer energizes the customer's on-site generating system or interconnects it with the City of Ames Electric Services' electric system.
4. The customer shall submit to City of Ames Electric Services a completed interconnection application form and signed agreement. The minimum term of an agreement under this Rider is one year, extended automatically unless terminated by either party with sixty days written notice.
5. The customer is responsible for the costs of interconnecting with the City of Ames Electric Services' electric system, including transformers, service lines, or other equipment determined necessary by City of Ames Electric Services for safe installation and operation of the customer's equipment with the City's system.
6. The customer is responsible for any costs associated with required inspections and permits.

Metering:

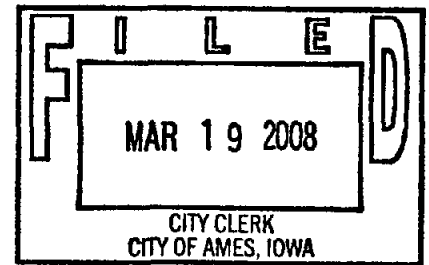
Metering under this Rider shall be performed by a single meter capable of registering the flow of electricity in two directions (delivered and received) to determine the customer's net energy flow.

Rate:

1. In a billing month after a customer receives approval to interconnect the customer's on-site generating system from City of Ames Electric Services, if the energy delivered by the customer's approved system to the City of Ames Electric Services' electric system exceeds the amount of energy delivered by City of Ames Electric Services to the customer, the City shall credit the customer's account for the energy generated as described below.
2. The monthly credit, if any, is calculated as follows:
 - a. Each kWh delivered from the customer's approved system to the City of Ames Electric Services' electric system in excess of the kWh delivered by City of Ames Electric Services is multiplied by the appropriate customer Electric Rate Schedule and banked as a credit to be applied to the customer's bill at the next appropriate due date.
 - b. All applicable state and local taxes will be added.
3. Any banked credits shall be applied to the utility charges due from the customer to the City of Ames Electric Services.
 - a. City of Ames Electric Services will carry customer credits for a period not to exceed twelve (12) months. Any credits that have been banked for a period of twelve months will be lost and the account reset.

March 17, 2008

To the attention of the City Manager, the City Council and the Mayor,



I am writing in support of a council action which will be presented in a few weeks by the City of Ames Electric Department. The Department has created an interconnect agreement for customers who plan to install solar panels, otherwise known as photovoltaic panels. Such customers would install panels in order to generate at least some of their electricity for their use.

The Unitarian Fellowship of Ames has an avid interest in conservation of energy and promotion of renewable energy. They have a committee devoted to such concepts and have already earmarked funds for a small solar panel system. The interconnect agreement being presented by the Electric Department will not only apply to the Unitarian Fellowship but will facilitate all future customers who have a similar interest. The Fellowship is eager to play a leadership role in this significant renewable energy area.

The City of Ames is participating in the Cool City program aimed at reducing the carbon footprint of our city. Encouragement of solar panels within the City of Ames will be a further contribution toward this goal.

Many cities throughout the country have addressed the concept of individual generation of electricity. By adopting the proposed interconnect agreement, the City of Ames will demonstrate a progressive attitude toward renewable energy and the enormous problem of global warming.

Thank you in advance for your attention to such significant concepts as global warming and their potential solutions.

Sincerely,

Janet E. McKee

Member of UUFA Committee on the Environment
5317 Valley Road
Ames, IA 50014
515-231-1003