

ORDINANCE NO. 35

Series of 1997

**AN ORDINANCE OF THE CITY OF GLENWOOD
SPRINGS, COLORADO, AMENDING THE ELECTRIC
SYSTEM TARIFF SHEETS BY THE ADDITION OF
PHOTOVOLTAIC CRITERIA (TARIFF SHEET NO. 32)**

WHEREAS, the City Council is the governing body of the Glenwood Springs Electric System; and

WHEREAS, the City Council desires to amend the Tariff Sheets of the Glenwood Springs Electric System to reflect photovoltaic criteria; and

WHEREAS, the City Council deems the amendments set forth herein to be procedural in nature, not directly affecting the rates, charges or services provided by the Electric System within the meaning of C.R.S. 40-3.5-101 et seq.

NOW THEREFORE, THE CITY COUNCIL OF THE CITY OF GLENWOOD SPRINGS, COLORADO ORDAINS:

The City Council hereby orders that the Electric System Tariff Sheets be amended by the addition of Sheet No. 29, Photovoltaic Criteria, as stated on Attachment 1 to this ordinance.

INTRODUCED, READ ON FIRST READING, PASSED AND ORDERED
PUBLISHED IN FULL THIS 6th DAY OF NOVEMBER, 1997.

CITY OF GLENWOOD SPRINGS, COLORADO



Sam Skramstad, Mayor

ATTEST:



Robin S. Clemons, City Clerk

INTRODUCED, READ ON SECOND READING, ORDERED PUBLISHED BY TITLE
ONLY TO BE EFFECTIVE TEN DAYS FOLLOWING THE DATE OF SECOND
PUBLICATION THIS 20th DAY OF NOVEMBER, 1997

CITY OF GLENWOOD SPRINGS, COLORADO



Sam Skramstad,, Mayor

ATTEST:



Robin S. Clemons, City Clerk

General Service

Classification:

MUNICIPAL

**PHOTOVOLTAIC
CRITERIA**

Conditions for Approval of Photovoltaic Installations

1. Photovoltaic (PV) inverter system is to include full protective systems to protect utility line personnel from back-feed onto the utility grid system upon utility power failure.
2. All wiring is to be in accordance with the 1996 National Electrical Code, Article 690, Solar Photovoltaic Systems. Particular attention shall be given to Article 690 G., Connection to Other Sources, and Article 690-64, Point of Connection.
3. The inverter A-C output supply shall be wired to an outside fusible disconnect, labeled "PV Power Supply", second line "Danger, Open When Working on Utility Supply Line," installed adjacent to the utility meter and disconnect switch.
4. The owner shall be responsible for the installation of the PV system and the PV installation must be inspected and approved by the State electrical inspector prior to energization.
5. The City reserves the right to conduct power quality surveys (harmonic recordings) of the PV A-C power system during the operating life of the PV system upon providing appropriate notification to the owner.
6. All grid-tied PV systems and all alternative power supply systems shall meet NESC safety and protection requirements and utility grade power quality standards for voltage and frequency. For small PV supply systems, harmonic content injection shall be limited to the levels prescribed in IEEE 519-1992. A copy of the IEEE-519 Standard is enclosed for reference, Attachment A.
7. The City will monitor harmonic levels for educational and informational purposes. If power quality deteriorates to unacceptable levels the City reserves the right to disconnect the PV system from the City utility grid.
8. Applicant shall furnish a 1-line electrical diagram of the PV system to the City prior to installation. The 1-line electrical diagram shall show all wiring, connecting points, and protective devices for the selected PV equipment components.
9. The City shall furnish and install a single-phase, 120/240V, 60Hz, meter capable of reverse power flow measurement. This meter shall be capable of subtracting Kwhrs flowing out to the City utility grid system from the Kwhrs supplied from the utility grid, resulting in net Kwhr readings delivered to the residence for billing by the City. The City will not reimburse the owner/residence for any surplus Kwhrs delivered to the City should the installation result in net Kwhr delivery to the City utility grid system. A st

CITY OF GLENWOOD SPRINGS
 ELECTRIC UTILITY BOARD
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 BY *Adams*

standard single-phase meter, with no detent, will record reverse energy flow and can be used to record bidirectional Kwhr use at this PV site.

REC'D BY BOARD
11/2/97
Aded

Advice Letter No. 20

Michael Capp
(Signature of Issuing Officer)

Issue Date 11/2/97

Decision or
Authority No. Ord. 97-37

CITY MANAGER
(Title of Issuing Officer)

Effective Date 12/5/97

CUSTOMER HARMONIC LIMITATION REQUIREMENTS

Each customer requesting electric service from the City of Glenwood Springs (City), single-phase or three-phase, shall be responsible for limiting the harmonic current distortion levels at their electric service metering point to the levels prescribed in IEEE 519-1992. The customer harmonic current injection shall be limited to the levels identified below, taken from the IEEE 519 Standard, copied below.

| CUSTOMER HARMONIC CURRENT INJECTION LIMITS | | | | | | |
|---|---------------------------------|-------|-------|-------|------|--------|
| SCR | Individual Frequency Limits (%) | | | | | |
| | h<11 | 11-17 | 18-23 | 24-35 | H>34 | TDD(%) |
| SCR<20 | 4.0% | 2.0% | 1.5% | 0.6% | 0.3% | 5.0% |
| 20<SCR<50 | 7.0% | 3.5% | 2.5% | 1.0% | 0.5% | 8.0% |
| 50<SCR<100 | 10.0% | 4.5% | 4.0% | 1.5% | 0.7% | 12.0% |
| 100<SCR<1000 | 12.0% | 5.5% | 5.0% | 2.0% | 1.0% | 15.0% |
| SCR>1000 | 15.0% | 7.0% | 6.0% | 2.5% | 1.4% | 20.0% |

NOTE: SCR = Ratio of the short circuit current to the maximum customer load current.

TDD = Total Demand Distortion, total current distortion in % of maximum customer load current.

MAXIMUM CUSTOMER LOAD CURRENT = Load current measured in the field while performing the harmonics investigation recordings.

The City shall be responsible for limiting the harmonic voltage distortion level to less than 5% THD, as identified in IEEE-519 standard, titled "Harmonic Voltage Distortion Limits." The City shall be responsible for performing the harmonic current field measurements or shall select a qualified representative to collect the harmonic field measurements. If the harmonic current injection levels exceed the limit standards, the City shall notify the customer of the power quality problem and, at its sole discretion, require the customer to correct the problem at no cost to the City. Failure by the customer to correct the current harmonics injection problem after notification from the City, shall warrant the City to disconnect the electric service. Small sized, utility-connected PV systems shall meet these harmonic standards as a minimum. Large sized, utility-connected alternative power systems shall meet utility grade 60 cycle, sine-wave, power quality standards.