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E-100 Sub 147

October 18, 2017

FILED
NOV 03 2017
Clerk's Office
N.C. Utilities Commission

NC Utilities Commission
Chief Clerk's Office
4325 Mail Service Center
Raleigh, NC 27699-4300

To Whom It May Concern:

Affidavit

Now comes, Michael Manning, by and thru the Notary of Georgia and who has personal knowledge of the following facts pursuant to the PURPA Laws 16 U.S.C. 2621, Section 111(d)(6), 16 U.S.C. 2625, Section 115 c and North Carolina Statute 62-2, 62-71,62-73,62-75, and 62-79;

The Utilities Commission is empowered, upon 'ONE OF THE PEOPLE OF THE UNITED STATES SEEKING A REVIEW OF AFFIRMATIVE DETERMINATIONS by the State of NC regulatory Commission, including regulating the Electric Membership Corporations, has a duty under the Federal Law to make a determination of a load management technique when requested to do so.

The Public Utility Regulatory Policy Act (PURPA) of 1978 'Load Management Standard' was first adopted by the North Carolina Commission in 1981 in Docket E-100.

These were the North Carolina Commission's findings of facts:

"The relevant PURPA documentation is found in Title 1, Subtitle B, Section 111, d: ESTABLISHMENT, the following Federal standards are hereby established: (6) LOAD MANAGEMENT TECHNIQUES. Each electric utility shall offer to its electric consumers such load management techniques as the State regulatory authority (or the nonregulated electric utility) has determined will -
(A) be practicable and cost-effective, as determined under section 115 (c).
(B) be reliable, and
(C) provide useful energy or capacity management advantages to the electric utility.

Whereas, pursuant to the Order of the NC Commission in 1981, "PURPA requires the electric utility to offer approved load management techniques to its customers." In 16 U.S.C. 2692 (c) the definition of load management technique means any technique to reduce the maximum kilowatt demand on the electric utility, including ripple or radio control mechanism and other types of interruptible electric service energy storage devices and **load limiting devices.**

PEAK LOAD DISTRIBUTOR™
U.S. PATENT # 4066913 - 4163271 - 6590304

The 'Electrical Peak Load Distributor' has been granted U.S. Patent 6,590,304 on July 8, 2003 to Michael Manning. The granting of said U.S. Patent for a concept and product designated a load limiting apparatus (See Section 115 (c)of PURPA is a device that will satisfy the Federal test set out in 16 U.S.C. 2625, Sec. 115 c, and identified as a Load Management Technique when applied to the utility grid or distributed electric systems. The patent issued to limit the demand for electricity of a residence to improve the efficiency is so recognized. (**See Exhibit A**).

Additionally, utilities are required pursuant to PURPA in 2005, Section 111(d) including (14) Time-Based Metering and Communications:

"Prices paid for energy consumed during these periods shall be pre-established and known to consumers in advance of such consumption, **allowing them to vary their demand and usage** in response to such prices and manage their energy costs by shifting usage to a lower cost period or reducing their consumption overall;"

An Example of the current Duke Energy's PURPA rate option is given below:

I Basic Facilities Charge per month $12.53

II. On-Peak Demand Charge per month

Summer Months	Winter Months
June 1 - September 30	October 1 - May 31
$6.14 per kW	$3.06 per KW

III. Energy Charge

All Month

a. On-Peak energy per month 5.2251 cents per kWh

b. Off-Peak energy per month 4.2725 cents per kWh

DETERMINATION OF ON-PEAK AND OFF-PEAK HOURS

On-Peak Period Hours

Summer Months	Winter Months
June 1- September 30	October 1- May 31
1:00 p.m. - 7:00 p.m.	7 a.m. 12 noon
Monday - Friday	Monday- Friday

Off-Peak Period Hours All other weekday hours and all Saturday and Sunday hours. All hours for the following holidays shall be considered as Off-Peak: New Year's Day, Memorial Day, Good Friday, Independence Day, Labor Day, Thanksgiving Day, Day after Thanksgiving Day and Christmas Day.

WHEREAS, The Peak Load Distributor has met the Standards of Load Management Technique upon being tested and approved by the Edison Test Lab in 1984 as having met the Standards for Industrial Control Equipment (U.L. 508) and **Energy Management Systems** (U.L. 916). (**See Exhibit B**).

Again, the three standards under PURPA for determining whether a device is a load management technique are:

(A). **Practicable and Cost-Effective:** 3,000 applications (customer investments only) at $100 per kw vs. $8,000 per kw nuclear (utility investment) (B). **Reliability:** The PLD has lasted 30 yrs. in the marketplace.
C. **Useful for the Utilities:** PLD is expandable, needs no programming, its practically maintenance free, fail-safe against brown outs and has been tested under U.L. or ETL comparable requirements for safety standards There is no utility investment, except for the new meter charge, which is paid for by an increase in the monthly base charge to compensate for the meter cost.

CONCLUSION:

WHEREAS, Dr. Ronald McClendon, University of Georgia Engineering provided an assessment of the technical merits of the Peak Load Distributor stating, "In summary, the PLD has met all the criteria of engineering design and has been proven effective." (**See Exhibit C**).

How the PLD works to limit demand at the customer's meter:

WHEREAS, of all residential electrical loads available; the range, hvac, dryer and water heater elements are the most likely candidates for load management. The main reason for this is the deferrable nature of these residential loads. The inherent thermal storage capabilities of these thermostatic control loads offered the PLD the opportunity to reduce the KW load (peak demand) without effecting the comfort and lifestyle of the customer by reducing the amount of energy required to operate the home in KWH's.

With the use of the PLD, customers are able to defer the dryer element and the water heater elements (9 kw), while the A/C operates, and the dryer element defers the water heater when the dryer elements are on. The range also cascades these loads. The coincident diversified demand reduction (9 kw) is essentially equal to 80% of the coincident diversified demand of the utility. The Department of Energy has been requested to approve this proven, reliable, and safe energy technique with (7kw) Carbon Credits for each residential application. These carbon credits could become the income means of creating a pay-back for the utilities to be compensated for their loss of income from utilizing and offering the PLD to their customers by discounting of the rate to the consumers as required by PURPA.

WHEREAS, upon approval by the Commission of the PLD being a load management technique, it being a patented and U.L. approved as being defined as a 'load limiting device' pursuant to (Section 115c of PURPA), then the State of North Carolina Utilities Commission is required to designate the PLD a Load Management Technique which will also satisfied North Carolina Statute 62-2 et al.

§ 62-2. Declaration of policy.

(a) Upon investigation, it has been determined that the rates, services and operations of public utilities as defined herein:
(3a) To assure that resources necessary to meet future growth through the provision of adequate, reliable utility service include use of the entire spectrum of demand-side options, including but not limited to conservation, **load management and efficiency programs**, as additional sources of energy supply and/or energy demand reductions. To that end, to require energy planning and fixing of rates in a manner to result in the least cost mix of generation and demand-reduction measures which is achievable, including consideration of appropriate rewards to utilities for efficiency and conservation which decrease utility bills; … (revenue from carbon credits)

WHEREAS, The PLD has been patented, tested by Edison Test Lab, proven and verified to be a load management technique. After 30 yrs. of operation in the marketplace, the PLD has been proven to be safe, reliable, economical, and meets all the standards of PURPA of 78 & 05 as a load limiting device!

IT IS, THEREFORE, A PROPOSED ORDERED as follows:

1. The peak load device patented by Michael Manning as the Electric Peak Load Distributor as a load limiting devices, is by this Order found to be a 'technique' when used in an electrical system wherein it limits demand and it will qualify under 16 U.S.C. 2621, Section 111 (d)(6), 16 U.S.C. 2625, Section 115 c and N.C.G.S 62-2 et al and is thus approved as a load management technique.

ISSUED BY ORDER OF THE COMMISSION.

This the _____ day of October, 2017.

North Carolina Utilities Commission

_____
Chief Clerk

I look forward to your response.

Best regards,

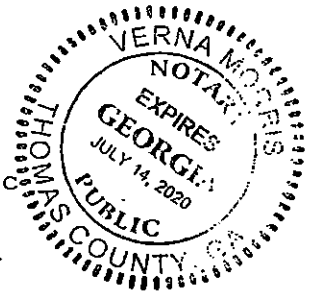
Michael Manning

Michael ~~Manning~~ / Inventor
349 Robins Wood Ct.
Moravian Falls, NC 28654

Sworn to and subscribed before me
This 19th day, October 2017.

Verna Morris Notary Public

My Commission Expires: _____



Date
July 8, 2003

Patent Number
6,590,304

Michael L. Manning

INVENTOR

ELECTRICAL PEAK LOAD DISTRIBUTOR

The Director of the United States Patent and Trademark Office has received an application for a patent for a new and useful invention. The requirements of law have been complied with, and it has been determined that a patent on the invention shall be granted under the law.

Therefore, this

United States Patent

Grants to the person(s) having title to this patent the right to exclude others from making, using, offering for sale, or selling the invention throughout the United States of America or importing the invention into the United States of America for the term of this patent, subject to the payment of maintenance fees as provided by law.

Director of the U.S. Patent and Trademark Office

U.S. PATENT INVENTOR CERTIFICATE

EXHIBIT 3

REPORT

ETL TESTING LABORATORIES, INC.

INDUSTRIAL PARK CORTLAND, NEW YORK 13045

Order No. 26915-S Date: March 22, 1984

REPORT NO. 462557

INSPECTION, TESTS, AND EVALUATION
OF AN ENERGY MANAGEMENT SYSTEM

GENERAL:

This report gives the results of the inspection, tests, and evaluation of the Model 8 Peak Load Distributor for compliance with the requirements of the Standards for Industrial Control Equipment (UL-508) and Energy Management Systems (UL-916). This investigation was authorized by Globe-Tronics Corp. Check No. 685 dated January 10, 1984 and was conducted from January 1984 to February 1984 at ETL's Cortland, NY testing facility.

CONCLUSION

A sample of the Model 8 Peak Load Distributor has been tested and examined and found to comply with the applicable requirements of the Standard for Electric Industrial Control Equipment (UL-508).

Report Approved by:

Richard J. Lelong, P.E.
Manager
Safety Division

In Charge of Tests

Mark N. Smith
Project Engineer

Shown below is how the product tested will appear in the Directory of ETL Listed Products.

CATEGORY 33

Energy Management System
Model No. 8-PLD
Model No. 9-PLD

Copied by: jc
Checked by:

1785
The University of Georgia

Faculty of Engineering

August 6, 2004

To Whom It May Concern:

Through this document I am providing an assessment of the technical merits of the Peak Load Distributor (PLD) from Manning Tronics, Inc. My qualifications for providing this assessment are provided at the conclusion of this document. I am not employed by Manning Tronics, Inc. nor would I benefit financially from the adoption of this technology.

I have had the opportunity to review the detailed technical aspects of the PLD as provided in the patent applications and supporting documents. The concept is technologically sound and surprisingly straightforward. It meets all the design process criteria we teach to our engineering students. The needs of the customer, in this case the electrical energy consumer, have been thoroughly researched. The customer wants reliable electrical power at a reasonable cost without inconvenience or discomfort. The PLD allows a deferral of energy consumption by those appropriate devices, such as a water heater, that will not inconvenience the user. As with most revolutionary concepts, the basic idea is simple. It is the implementation of the concept in a reliable and cost effective manner that precludes most of these concepts from being successful. In many engineering designs, the concept works well on paper but it fails to perform in practice due to unforeseen circumstances. This is not the case with the PLD. These devices have had extensive testing under varied conditions for a period of over twenty years in states in the Southeastern U.S. Additional tests are underway in other regions of the U.S. and internationally.

Driftmier Engineering Center • Athens, Georgia 30602-4435 • (706) 542-1653 • Fax (706) 542-8806

By necessity, power companies must design their generating plants to meet the peak demands of their customers. These companies have been successful in meeting the growing needs of consumers in the U.S. However, in meeting the peak demand needs the power companies have obligated themselves to an overcapacity situation for most of the time. The associated costs of this overcapacity must be borne by the consumer. The basis for the PLD is marvelously simple: reduce the peak demand. This solid state device is relatively inexpensive and has been demonstrated to work effectively and be cost effective. With widespread adoption, the unit cost will drop making it even more attractive.

The brown-out and black-out events during the summer of 2003 have demonstrated the vulnerability of our power grid. Sweeping changes in the manner in which we supply and distribute electrical power are being proposed. Many homeowners and business owners are now considering standby generators. The PLD technology is highly compatible with this trend. The PLD through its load distribution could reduce the power needs in half thus allowing for a smaller standby generator. The associated fixed and variable costs of the generator then would be reduced. As new technologies for standby electrical power generation become available, the PLD will still be compatible.

The question remains as to why this device has not been universally adopted? The only reason that I can determine is one outside of my area of expertise: Politics. I lack an understanding of the complicated interactions of utility companies, Public Service Commissions, and the legislative, executive, and judicial branches of government in this regard. In summary, the PLD has met all the criteria of engineering design and has been proven effective. My concern is that a foreign country might appropriate this technology and implement it. As has happened in other instances, the U.S. might eventually find itself paying to use this technology when, in fact, it was developed here.

My qualifications for performing this assessment are given in the following. I hold an accredited BS and MS in Aerospace Engineering and Ph.D. in General Engineering. I have worked in industry as an Aerospace Engineer for Lockheed Aircraft Corporation in Advanced Design Aerodynamics. Following the completion of my Ph.D. I have worked in engineering education and research for 30 years. During that time I have taught courses in mechanical engineering, electrical engineering, industrial engineering, aerospace engineering, engineering mechanics, artificial intelligence, and biological engineering at three major research universities. At the University of Georgia I taught Microcontrollers and Utilization of Electric Power and Equipment in addition to other engineering courses. These courses are pertinent to the PLD concept. I served as coordinator for undergraduate engineering programs at the University of Georgia for over seven years and I serve as a faculty fellow of the Artificial Intelligence Center.

Please feel free to contact me if I can clarify my assessment.

Sincerely,

Ronald W. McClendon, Ph.D.