

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

**In Re Application of:**

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**For: METHOD AND APPARATUS FOR INSTALLING AND MONITORING  
RESIDENTIAL ELECTRICITY UTILITY SERVICES**

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Sir:

**PATENT APPLICATION TRANSMITTAL LETTER**

Transmitted herewith for filing, please find

A Utility Patent Application under 37 C.F.R. 1.53(b).

It is a continuing application, as follows:

continuation     divisional     continuation-in-part of prior application number  
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A Provisional Patent Application under 37 C.F.R. 1.53(c).

A Design Patent Application (submitted in duplicate).

Including the following:

## Provisional Patent Application

TITLE: Method and Apparatus for Installing and Monitoring  
Residential Electricity Utility Services

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### BACKGROUND OF INVENTION:

#### Field of the invention:

The present invention relates generally to a system for providing monitoring of electricity utility services within a development. Typically, utilities such as water, electricity, and natural gas are distributed throughout the development and normally remain as independent systems. Within a residence, utility metering is usually done through some mechanical means and recorded manually. This invention involves monitoring electricity and other utility services throughout the development, placing the resulting data on communications transport systems, and providing electronic reading of the usage and centralized utility management for the development.

#### Description of the Prior Art:

Traditionally, utilities have been installed in new developments by companies that operate independently. In the emerging regulatory environment providing for facilities competition, new ways of operating the delivery of the systems are possible. Much has been previously done in prior technology development to find economical ways to retrofit the monitoring of each utility's usage. Attempts have been made to use wireless technology, putting the signal over the phone system though in-band and out-of-band signals, and through the cable television system.

These systems are focused usually on monitoring a single utility and usually have high installation costs that keep them from being used on a large scale basis,

particularly for monitoring electricity usage. Unless a large majority of the metering is done electronically, a human meter reader would be required anyway and the cost benefits are substantially reduced.

New communications technologies have also reduced the need for dedicated wiring to each individual residence. Extending this into the residence, multiple services can be monitored through a single wire. The new forms of LAN technologies can allow every home and every utility transport-monitoring device to share a single wire or be wired in groups.

The present invention thus arises from the need to reduce the costs of monitoring the transport system and the varied usage by each customer. There are economies of scale that arise when all the utilities can be monitored together. In accordance with the invention, there is no longer a need to have all of these systems operate independently. Rather, the monitoring of all utilities may be provided by the communications infrastructure that is servicing the development, and the monitoring of electricity usage may be combined with the monitoring of other utilities. These combinations only recently have become possible thus leading to a new approach that can be exploited for reduced costs.

#### SUMMARY OF THE INVENTION:

The present invention is a method of providing economical monitoring of utility transport systems and residential usage in new residential housing/commercial developments. These utilities may consist of, but are not limited to, water, electricity, and natural gas. Monitoring of electricity and other utility usage is done through the communications infrastructure available in the development.

The method of the invention includes the steps of:

- Placing communications and utility infrastructure in the new residential housing/commercial development during construction of the new development;
- Terminating communications and utility services at respective subscriber premises in the new residential housing/commercial development;
- Within the residence, providing links to each usage metering system of each utility;
- Connecting the residential customer in the development to a monitoring device responsible for monitoring the infrastructure and usage of the utilities;
- Using this development monitoring system to report the residential usage of these multiple utilities to the utility service providers; and
- Using this development monitoring system to report the status of the transport systems to the respective utility service provider.

While the invention is intended primarily for new residential and commercial developments, it may be extended to include older residential and commercial developments that need to have their communications and utility infrastructure replaced.

In accordance with the method of the invention, new infrastructure is installed in new developments at the time the new houses are built. The developer provides a central monitoring facility and contracts with the electricity company and other utility companies to provide the electricity and other utility services to all customers serviced by the developer's infrastructure. Since the utility monitoring infrastructure is provided by the developer, the developer gets a recurring revenue stream. Also, since the utilities are monitored and administered by the developer or a partner company of the developer, the customer may receive the benefit of volume discounts for the utilities, thereby giving home owners an incentive to use the new infrastructure. Other competitors would be at a tremendous disadvantage since they must put in infrastructure after the homes are built.

The method of the invention may also be used when new infrastructure is installed in an old development. A legal entity such as a home owners association may enter into a contract to replace the old infrastructure due to age, reliability, feature, etc. This legal entity could then get a recurring revenue stream, as in the case of the developer of the new residential neighborhood. The same incentives to use the system would apply as well.

#### BRIEF DESCRIPTION OF THE DRAWING:

Figure 1 illustrates the interconnection between utility subscribers within a residential or commercial development with utility monitoring equipment using packet transfer technologies in accordance with the invention.

#### DETAILED DESCRIPTION OF PRESENTLY PREFERRED EMBODIMENTS:

Many of the traditional utilities that provide services to the home such as natural gas, water, electricity, and communications have been monopolies. When a new residential/commercial development was established, the infrastructure for these utilities was installed. The developer was not entitled to any ongoing revenue associated with these installed services after the development process. There were also few choices of the provider for these services.

Under deregulation, these monopolies are being discontinued and competitive alternatives are emerging. In Georgia, gas marketers own the customers and the gas provider is not allowed to enter the market. In Pennsylvania, electricity choices are possible. Across the country, communications is now open to competition.

It is now possible for a developer to make the choice of the companies that should supply these utilities to his development. Since the land has not yet been released to private residence owners, the developer has complete choice and can use this to structure a

business arrangement. The arrangement of the invention would grant a recurring revenue stream to the developer for consideration by a supplier of the service.

Once installed, these utilities enjoy a competitive advantage. After the development becomes occupied, it is more costly to overbuild another infrastructure. It also becomes somewhat more risky for the competitor because the number of subscribers will be less than 100%.

There are three recent developments that make the present invention practical by allowing a dramatic reduction in costs by shifting to an electronic monitoring and reporting system for all utilities in a commercial or residential development:

- It is now possible to have alternate providers of each utility service. The developer or alternate provider may now install, own, and operate the new residential transport systems. Because of this, a developer may now minimize costs for the combined utilities.
- There is a very small, incremental cost to provide the electronic monitoring for each utility when it is done when the development is installing the infrastructure. The digging / trenching costs for monitoring are reduced when the pipes are being installed. Within the residence, there is a very minimal cost of running the wires to each of the utility usage-monitoring devices when it is being constructed.
- New communications technologies allow very inexpensive devices to share the same communications monitoring link going to multiple residences.

Figure 1 illustrates a system in which each of the utility services (74) is delivered to each residence (10) through a common transport. Monitoring links within the residence (10) are combined within the residential communications access device (16) and can be a mixture of technologies. Options may include, but are not limited to, RS422, 10BaseT, X.10, or IIC. A single shared media or multiple dedicated links can reach from the access device (16) to the various utility usage monitoring devices. The economical aspects of this invention are that the costs for the communications access device (16) are shared amongst the various utility providers thereby reducing the average cost.

The central communications monitor (70) provides the intelligence for monitoring the transport systems and for obtaining the residential usage information. It consists of termination of the backbone cable(s) (75), the monitoring device (42), and the interface(s) (156) into a Metropolitan Area Network (MAN) (158). The MAN transport sends/receives information from each of the utility provider's networks (158).

There are many different types of MAN transport systems that can be used. Among them, but not limited to these choices, are ISDN, Frame Relay, ATM, ADSL, T-carrier links, SONET, cable television systems, and wireless.

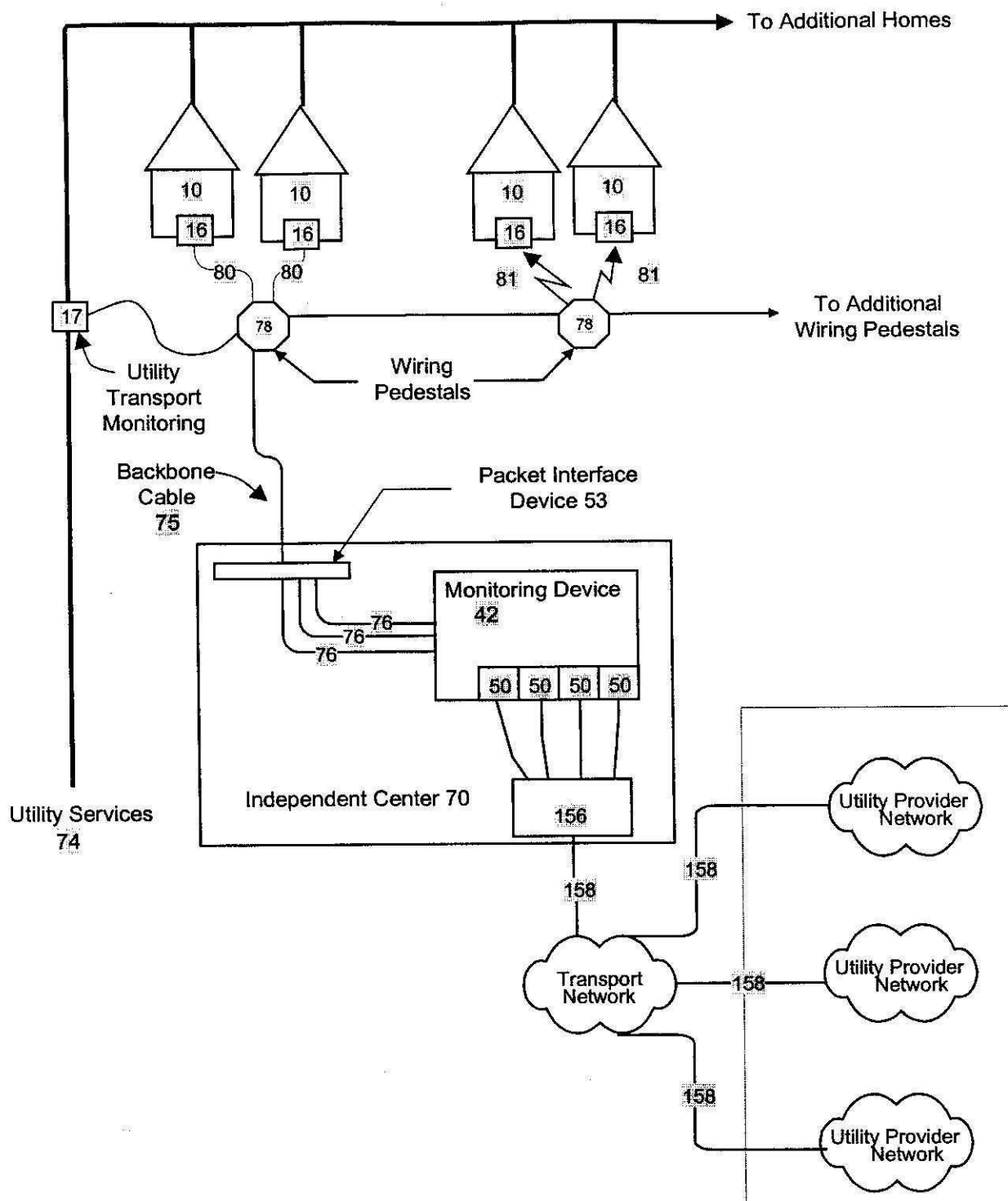
The links from the each residence (10) into the development transport (80) may similarly be done through many different technologies. Local Area Network Technologies such as 10BaseT, RS-422, Cable Television, and wireless links (81) are capable of providing the transport of the residential utility information.

WE CLAIM:

- 1) A method of providing electricity utility usage monitoring information for a residence to the electricity utility comprising the steps of:
  - placing electronic monitoring equipment for a plurality of utilities, including electricity, in the residence during its construction;
  - the electronic monitoring equipment monitoring the utilities within the residence to determine utility usage information;
  - transporting the utility usage information over a communications infrastructure to a monitoring facility maintained in or near a development containing said residence;
  - collecting the utility usage information at the monitoring facility for a plurality of residences near or within the development; and
  - transmitting the electricity utility usage information for each residence electronically from the monitoring facility to the electricity utility.

## ABSTRACT

A system and method of providing economical monitoring of utility transport systems and residential utility usage in new residential housing/commercial developments. These utilities may include, but are not limited to, water, electricity, and natural gas. This monitoring is done through the communications infrastructure available in the development. The utility monitoring method of the invention includes the steps of placing communications and utility infrastructure in the new residential housing/commercial development during construction of the new development, terminating communications and utility services at respective subscriber premises in the new residential housing/commercial development, providing links within each residence to each usage metering system of each utility, connecting the residential customer in the development to a monitoring device responsible for monitoring the infrastructure and usage of the utilities, using this development monitoring system to report the residential usage of these multiple utilities to the utility service providers, and using this development monitoring system to report the status of the transport systems to the respective utility service provider. This approach will allow the developer to act on behalf of numerous residential customers in negotiating utility services, such as electricity services, for the customers.



**Figure 1. Interconnection Between Subscribers within a Residential or Commercial Development with Monitoring Using Packet Transfer Technologies**