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In Re Application of:

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For: METHOD AND APPARATUS FOR INSTALLING AND MONITORING RESIDENTIAL 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 ___/_____.

☒ 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 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 utility services within a residential or commercial development. 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 multiple 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. 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. 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. This monitoring 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.

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:

There are three recent developments that allow 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 together. Because of this, the customer may benefit from reduced 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 1illustrates 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 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 utility usage monitoring information for a residence to the appropriate utility comprising the steps of:

placing electronic monitoring equipment for each utility 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 utility usage information for each residence electronically to the appropriate 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.

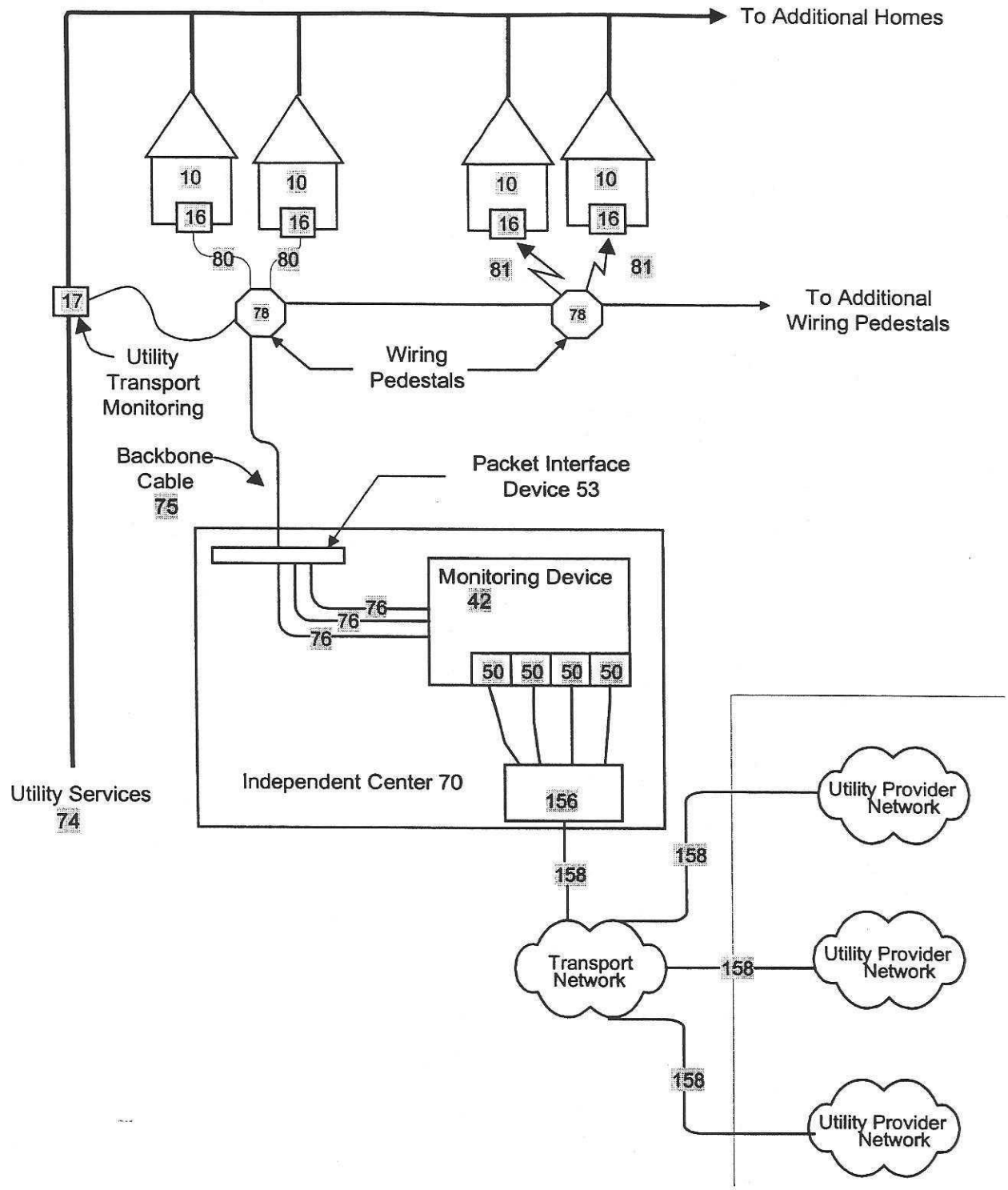

Figure 1. Interconnection Between Subscribers within a Residential or Commercial Development with Monitoring Using Packet Transfer Technologies