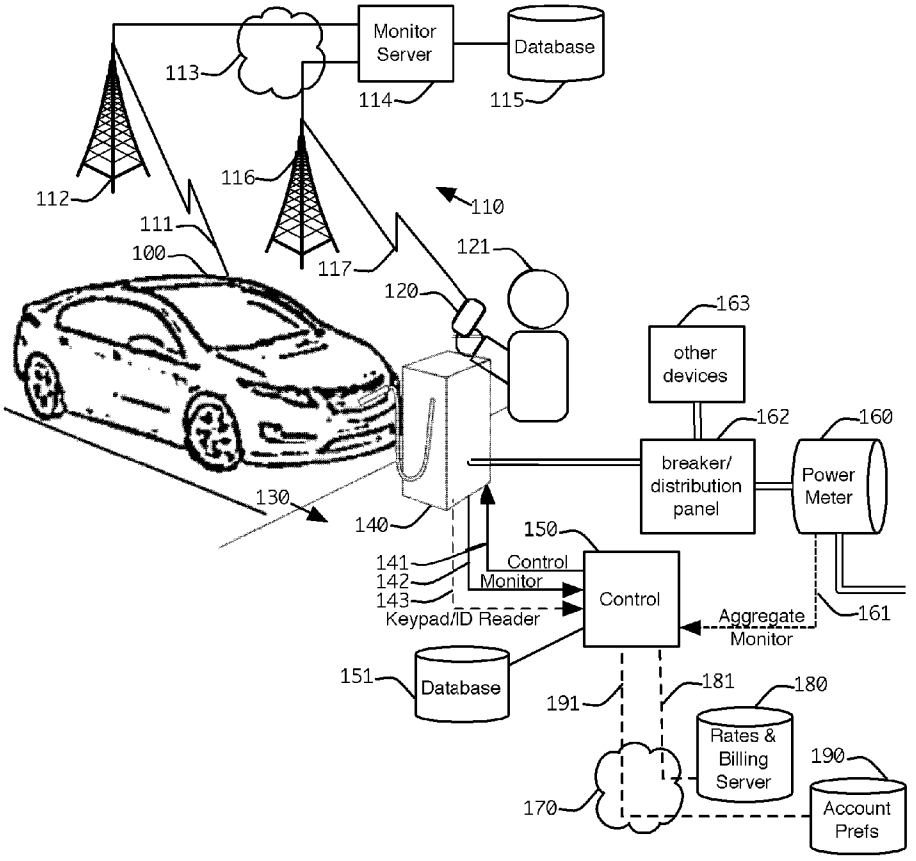
Monitor Server
Database
113
114
115
112
116
110
111
100
117
121
120
163
other devices
162
160
breaker/ distribution panel
Power Meter
130
140
150
141
142
143
Control
Monitor
Keypad/ID Reader
Control
Aggregate Monitor
161
151
Database
191
181
180
Rates & Billing Server
190
170
Account Prefs

FIGURE 1

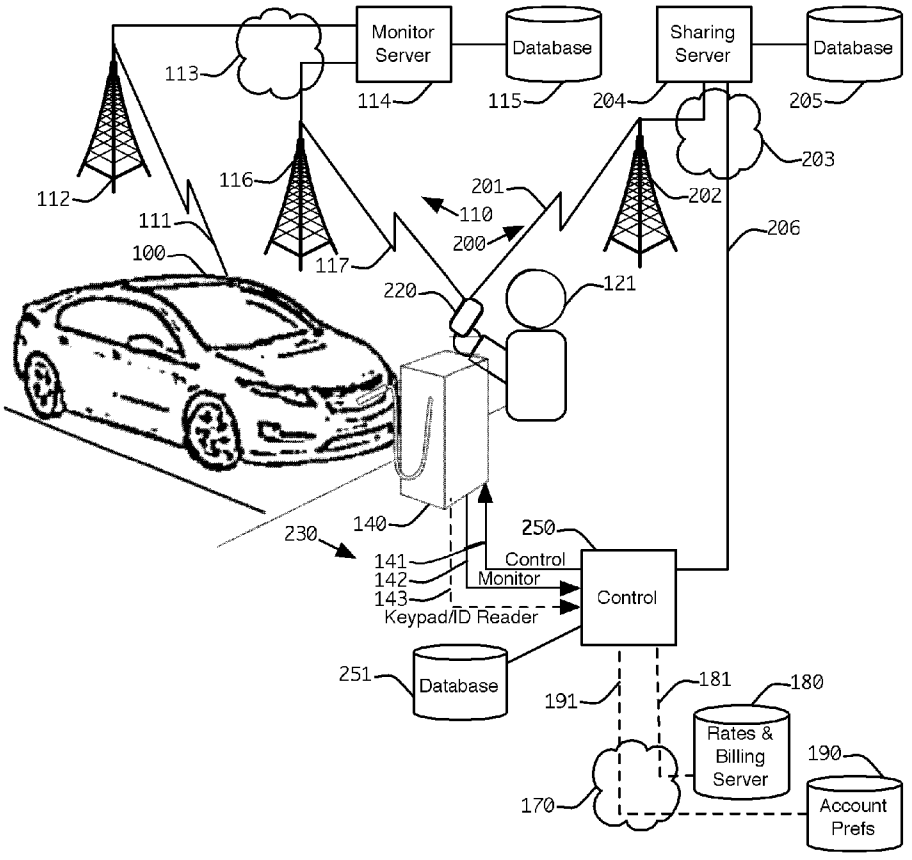
Monitor Server
Database
Sharing Server
Database
113
114
115
204
205
203
112
116
201
110
202
111
200
206
100
117
220
121
140
230
250
141
142
143
Control
Monitor
Keypad/ID Reader
Control
251
Database
191
181
180
Rates & Billing Server
190
170
Account Prefs

FIGURE 2

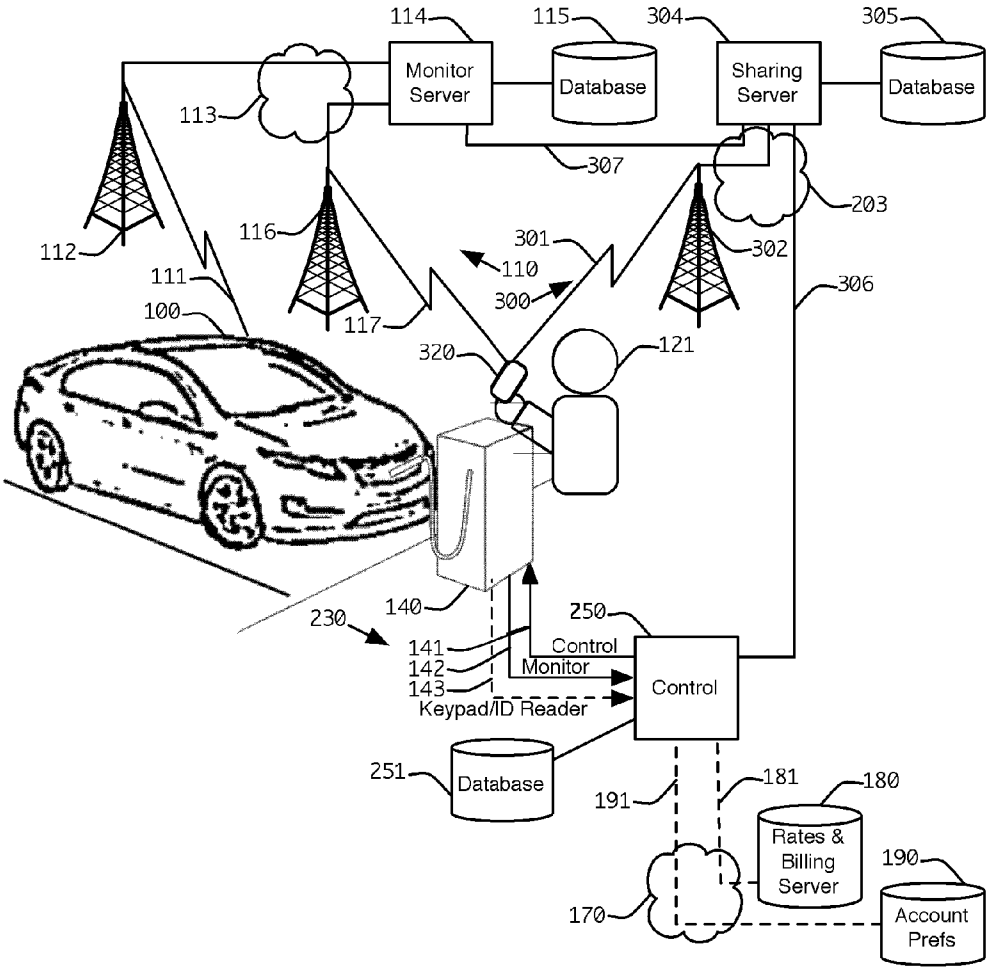
114
115
304
305
Monitor Server
Database
Sharing Server
Database
113
307
203
116
301
302
112
110
111
300
306
100
117
320
121
140
230
250
141
142
143
Control
Monitor
Keypad/ID Reader
Control
251
Database
181
180
191
Rates & Billing Server
190
170
Account Prefs

FIGURE 3

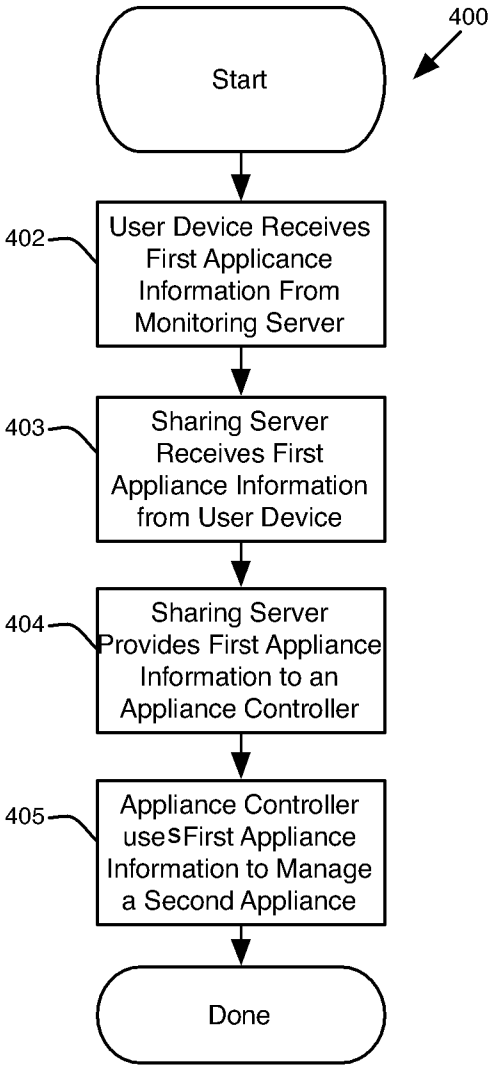
400
Start
402
User Device Receives First Applicance Information From Monitoring Server
403
Sharing Server Receives First Appliance Information from User Device
404
Sharing Server Provides First Appliance Information to an Appliance Controller
405
Appliance Controller uses First Appliance Information to Manage a Second Appliance
Done

FIGURE 4

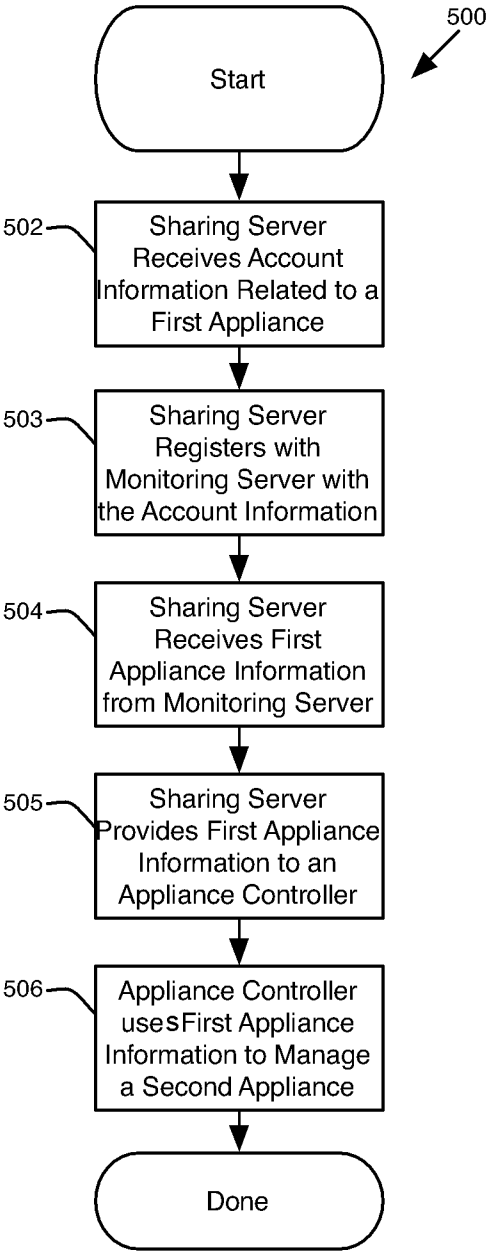
500
Start
502
Sharing Server Receives Account Information Related to a First Appliance
503
Sharing Server Registers with Monitoring Server with the Account Information
504
Sharing Server Receives First Appliance Information from Monitoring Server
505
Sharing Server Provides First Appliance Information to an Appliance Controller
506
Appliance Controller uses First Appliance Information to Manage a Second Appliance
Done

FIGURE 5

METHOD AND APPARATUS FOR SHARING ELECTRIC VEHICLE AND ELECTRIC APPLIANCE USAGE DATA

[0001] This application claims priority to U.S. Provisional Patent Application 61/715,856 filed on Oct. 19, 2012 and entitled "System and Method for Managing Vehicle Charging Stations", which shares common inventor-ship with the present application and is hereby incorporated by reference in its entirety.

BACKGROUND

[0002] 1. Field of the Invention

[0003] The present invention relates generally to the field of electrical energy supply and usage and more particularly to a method and apparatus for sharing usage data from Electric Vehicles (EVs) and fixed appliances.

[0004] 2. Description of the Prior Art

[0005] As the smart grid and smart appliances (both mobile, such as electric vehicles, and stationary) develop, permeating offices, homes, multi-unit dwellings, industrial parks, etc., and as networks and data become more ubiquitous, and as the standards evolve and perhaps merge to become well accepted and universal standards, then sharing the usage data, often in real time, or some reasonable time frame, such as fifteen minute or hourly updates, among members, or subscribers to an energy community will be valuable. This concept is based on a plurality of subscribers all sharing energy from a mix of energy sources based on multiple variables such as demand, pricing, source of energy, etc. A total, off grid, or partial off grid energy management system will become more meaningful and efficacious both for the energy subscribers and the energy suppliers.

[0006] Standards for the smart grid and smart appliances are emerging, for example, the Open Automated Demand Response (OpenADR 2.0) by the OpenADR Alliance of Morgan Hill, Calif. and the Smart Energy Profile (SEP 2.0), a standard for applications that enable home energy management selected by the United States National Institute of Standards and Technology and promoted by the Consortium for SEP 2 Interoperability, of Santa Clara, Calif.

[0007] Already available for many EV's are applications designed to communicate data from the EV to the vehicle's owner through a network, components of which are usually owned and managed by the vehicle manufacturer. Specific to EV's, Ford Motor Company has MyFord® Mobile. Nissan North America, Inc. of Franklin, Tenn. has their CARWINGS® network. General Motors Co. of Detroit, Mich. has the OnStar® network. Toyota Motor Sales, U.S.A., Inc. of Torrance, Calif. has the Entune® network, etc. These networks have many features in common, and generally also allow the EV owner to send data from his smartphone or computer through the network back to the EV. These applications are valuable tools for an EV motorist as their EV's data and state-of-charge (SoC), including whether the EV is connected to charging equipment or not, and estimated miles able to be driven, are all important information for EV owners and also to asset managers.

[0008] Data sharing can work with not only such EV-specific systems, but with all appliances that can be in contact with a network and remote database. Hence, what is needed is data sharing that can work with not only such EV-specific systems, but with all appliances that can be in contact with a network and remote database.

[0009] The Hydra™ system, manufactured and marketed by Liberty Access Technologies, Inc. of Santa Barbara, Calif., and described in U.S. Provisional Patent Application 61/715,856, supports a reservation, access control, and status monitoring system for which the owner's vehicle year and model and usage profile would be important information to have in an energy usage database (United states provisional patent application No. 61/715,856 is hereby incorporated by reference in its entirety). However, a system similar to this for property owners and tenants of all sorts could be valuable based on individual usage of electricity. Member profiles can be created that indicate appliances owned, and current and planned usage. The larger group, such as an office building or an energy community, either off grid, or partially off grid, might have its own, over-arching profile of energy usage based on the price and source of energy. Further data would be valuable to this group of energy Users, or to any network of EV's and appliances, for which important data may include:

[0010] information about both the owner of the EV or appliance,

[0011] EV or appliance make and model,

[0012] EV State of Charge (SoC),

[0013] temperature of batteries,

[0014] temperature of interior of vehicle

[0015] setting "time of charge"

[0016] mapping EV time and location,

[0017] performance history of this EV

[0018] odometer reading,

[0019] maintenance history of this EV

[0020] For residences or offices that are part of an energy community, information such as temperature and humidity in living and work spaces will be very important and smart thermostats of all types are now available on the market that could be tied into a system based on the above mentioned standards and protocols.

[0021] Information about the EV owner (or driver) not only allows a User access to the account and corresponding information, including the setting of User preferences, but is particularly valuable when it is associated with other owned or related devices (e.g., a second EV, or as discussed below, other appliances). The EV make and model are valuable as they allow access to a further database of technical specifications for the vehicle and battery, which may include ideal charging parameters, expected battery capacity, status code translations, etc. The SoC may be recorded and presented as a fraction of maximum charge (e.g., a percent), or as a quantity of energy (e.g., kilowatt-hours), but these units are not so User-friendly and so SoC may be most usefully presented as an expected available range (e.g., in miles or kilometers). Battery temperature may be used to optimize charging efficiency and to de-rate the expected range being presented, in accordance with specifications relating to the battery's temperature. Temperature of the vehicle's interior can be used to engage a cooling system, while still connected to electric vehicle service equipment (EVSE, or colloquially, "EV charger") or otherwise, in advance of a User's return to the vehicle. EV location, accumulated to produce a mapping history is particularly valuable when noted with time, as this allows automatic systems to anticipate a next likely journey, e.g., a commute home from work. Location and time are also important for anticipating energy costs, which may vary by time and by locale, where locale dictates the energy supplier, or source of energy available, if clean energy. Performance history of the EV is valuable, e.g., for detecting gradual

declines in effective battery capacity. A recent odometer reading and maintenance history are valuable as they allow a system to account for changes in expected performance, e.g., after a maintenance session that includes certain filters being replaced or tires being replaced, certain performance parameters would be expected to change, such as the battery running fractionally cooler or the starting acceleration being fractionally lower.

[0022] A similar suite of data from non-mobile appliances, such as heating, ventilation, air condition (collectively, HVAC), refrigerators, compressors, etc., offers valuable information to an owner, such as a landlord or building manager who wishes to know more about usage in his building or buildings. Additional benefits would accrue to the community were the owner to be willing and able to share this information with others in the area.

[0023] There is currently no system for forwarding and sharing EV or other appliance data from EV owners' computers or mobile devices to a central database where this data can be aggregated and processed and securely shared, as needed, among a group of EV owners and EVs and EV charger asset management systems. In one preferred embodiment, the EV's self-generated data is gathered via a wireless network and merged with the same EV's charging data in order to offer detailed reports for a fleet management service. To be more specific, each EV has the ability to report on its location and on its own internal status, such as SoC and odometer readings, etc. The intent of this novel method is to gather all of the EV-based data and store and process this data at a remote database and also match this data by location, date, time, and ID number with EVSE-based usage data from a networked charging system for the same EV and the same charging event(s). This matched data will be valuable for any asset and energy management system. Our preferred embodiment is a Hydra-based EVSE networked charging system for gathering the electricity usage data; however, this novel concept can work with any EVSE networked charging system.

SUMMARY OF THE INVENTION

[0024] The present invention relates to a method and apparatus for sharing usage data from EVs and fixed appliances. The invention allows EV and other appliance owners, to share important data with other appliance owners or with nearby systems and service providers such as fleet management services. For example, for an EV, data, such as SoC, or whether or not the EV is presently connected to an EV charger, can be shared through a back-end server and database, with a control system that can now know the type of vehicle that is connected to a particular EV charger, and the SoC of that EV's battery. Not only is this information important to the EV owner, but it is also important for administrative processes, for example those being implemented by a reservation, access, and charging management system (e.g., Hydra™ or other networked EVSE), which can benefit from an improved prediction of when an EV will be charged to a certain SoC and therefore, when an EV charger might be available. Such a back-end server and database can also know when an EV owner has been notified that his EV is charging, or fully charged, and if charging has ceased and if the EV is still connected to an EV charger. Such data originates at the EV (or other appliance), is sent wirelessly to the EV manufacturer's central database by means well-known in the art, and from there is sent to, or can be requested by, or is otherwise made available to, the EV owner(s). This data can be used for asset control, management, planning, reservation purposes and the like.

DESCRIPTION OF THE DRAWINGS

[0025] The present invention is best understood in the context of the following figures, in which:

[0026] FIG. **1** is a block diagram for a closed appliance information system and a separate appliance controller system;

[0027] FIG. **2** is a block diagram of one embodiment of the present invention to couple an appliance information system to an improved appliance controller;

[0028] FIG. **3** is a block diagram of another embodiment of the present invention to couple an appliance information system to an improved appliance controller;

[0029] FIG. **4** is a flowchart for an embodiment of a process of improved appliance control; and,

[0030] FIG. **5** is a flowchart for another embodiment of a process of improved appliance control.

[0031] Several drawings and illustrations have been presented to aid in understanding the present invention. The scope of the present invention is not limited to what is shown in the figures.

PARTS LIST

FIG. 1:

[0032] **100** Electric vehicle (with telematics module, not shown)

[0033] **110** telematics system

[0034] **111** communication link between telematics of EV **100** and telematics server **114**

[0035] **112** transceiver (e.g., cell tower of mobile Internet service provider) to vehicle (part of link **111**)

[0036] **113** network (e.g., Internet) providing part of links to server **114**

[0037] **114** telematics server

[0038] **115** telematics database (users, vehicles, usage/performance/maintenance data, etc.)

[0039] **116** transceiver (e.g., cell tower of mobile Internet service provider) to user device (part of link **117**)

[0040] **117** communication link between user device **120** and telematics server **114**

[0041] **120** user device (e.g., smart phone, iPhone) with app compatible with telematics system **110**

[0042] **121** user, owner of EV **100**, subscriber to telematics system **110**

[0043] **130** managed charging system (e.g., Hydra™)

[0044] **140** EVSE (electric vehicle service equipment, colloquially, "charger")

[0045] **141** control signal from controller **150** to EVSE **140**

[0046] **142** monitor signal from EVSE **140** to controller **150**

[0047] **143** keypad or ID reader signal from EVSE **140** to controller **150** (to authenticate a user)

[0048] **150** control system for EVSE **140**, moderates use based on information:

[0049] e.g., monitor signal **142**, other power monitor **161**, rates **180**, preferences **190**, user ID (via keypad/reader signal **143**)

[0050] **151** database of policies by which controller manages

[0051] **160** power meter indicative of usage by EVSE **140**, and perhaps other equipment **163**

[0052] **161** power usage signal, may be aggregated

[0053] **162** panel (may include breakers) from which power measured by meter **160** is distributed

[0054] **163** other devices which may be unmanaged or otherwise managed

[0055] **170** network (may comprise Internet)

[0056] **180** server offering current and/or projected energy rates, and perhaps collecting billing information

[0057] **181** connection to energy rate information server **180**

[0058] **190** server offering account preferences as set by users (e.g., **121**)

[0059] **191** connection to preferences server **190**

FIG. 2:

[0060] **200** energy data sharing system

[0061] **201** communication link between user device **220** and sharing server **204**

[0062] **202** transceiver (e.g., cell tower of mobile Internet service provider) part of link **201**

[0063] **203** network (e.g., Internet) part of links to sharing server **204**

[0064] **204** sharing server for providing interchange of energy information

[0065] **205** sharing service database (users, devices, account, permissions, associations)

[0066] **206** link (via network) between control **250** and sharing server **204**

[0067] **220** user device (e.g., smart phone, iPhone) with app compatible with telematics system

[0068] **110** and sharing service system **200**.

[0069] **230** improved appliance management system (here, an EVSE **140** and controller **250**) (not shown here is that this controller can have access to similar meter **160** as in FIG. **1**)

[0070] **250** improved appliance controller, having connection to sharing service **200**

[0071] **251** policy database, includes additional policies exploiting shared information via **206** FIG. **3**:

[0072] **300** energy data sharing system

[0073] **301** link between user device **320** and sharing server **304**

[0074] **302** transceiver (e.g., cell tower of mobile Internet service provider) part of link **301**

[0075] **303** network providing links to sharing server **304**

[0076] **304** sharing server, similar to **204**, but also able to communicate with telematics server

[0077] **114** directly

[0078] **305** database (similar to **205**)

[0079] **306** link between sharing server **304** and controller **250**

[0080] **307** link between sharing server **304** and telematics server **114**

[0081] **320** user device (smartphone, iPhone) with app compatible with at least the sharing system **300**, but optionally also compatible with telematics system **110**.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0082] The present invention allows EV, and other appliance owners, to share important data with other appliance owners or with nearby systems and service providers such as fleet management services. For example, for an EV, data such as SoC, odometer reading, or whether or not the EV is presently connected to an EV charger, can be shared through a back-end server and database, with a control system that can now know the type of vehicle that is connected to a particular EV charger, and the SoC of that EV's battery. Not only is this information important to the EV owner, but it is also important for administrative processes, for example those being implemented by a reservation, access, and charging management system (e.g., Hydra™ or other networked EVSE), which can benefit from an improved prediction of when an EV charger might be available. Such a back-end server and database can also know when an EV owner has been notified that his EV is charging, or fully charged, and if charging has ceased and if the EV is still connected to an EV charger. Such data originates at the EV (or other appliance), is sent wirelessly to the EV manufacturer's central database by means well-known in the art, and from there is sent to, or can be requested by, or is otherwise made available to, the EV owner (s). This data can be used for asset control, management, planning, reservation purposes and the like.

[0083] In particular embodiments, this data may be made available through the corresponding EV owner's smartphone or computer, which is already registered with the manufacturer's network and system. In one embodiment, this data is shared with and through a data aggregator that collects, stores, processes, analyzes, and uses this data directly for asset control and management purposes, notification purposes, planning and reservation purposes. The information is provided directly to a data center, or indirectly by providing information to systems running such data processes. The present invention provides owners of EV's and other appliances from all different manufacturers to share this data whether directly from the manufacturers' data systems, where supported, or through the EV owners' computer and mobile phone applications, as necessary.

[0084] An embodiment where EV data is obtained directly from the manufacturers' system may be the ideal embodiment and this will likely be possible in fleet applications because the fleet owner will own the vehicles and the data from the fleet vehicles; however, in a non fleet, or private owner application such as an employee, this can entail complicated negotiations, the manufacturers' security fears, and most likely access fees. Therefore, another embodiment of this invention for non-fleet use, is an application or extension to an existing application that is offered to all EV owners, including employees, that runs on all of the computer, mobile device and smartphone operating systems available. Thus, for non-fleet EV's, the relationship is made directly with the owner of the EV (or other appliance) to allow the EV data to be shared from and by his device of preference (e.g., smartphone, desktop computer, etc.), whether wireless or wired, to a central, aggregator database as shown in FIG. **1**.

[0085] FIG. **1** shows a block diagram of a closed appliance information system and a separate appliance controller system. A mobile appliance, namely an electric vehicle (EV) **100** is parked near a managed charging system **130** including an electric vehicle service equipment (EVSE or "charger") **140**. The EV can communicate wirelessly **111** with a monitor

server **114** (which can be a server operated by the manufacturer) over the Internet **113** or directly using one or more cellular towers **112** or by any other wireless means. The monitor server **114** is in data communication with a database **115** that can contain information about the vehicle and about the particular charging station. The charging facility **140** is managed by a controller **150** that can be a computer, microcontroller or any other type of controller. The controller **150** can send commands to the charging station **140** by a direct or wireless link **141**. The controller **150** can receive status and other data from the charging station by a second direct or wireless link **142**. In addition a keypad or ID reader located in the charging station kiosk or console can communicate keypad or ID data to the controller **150** via a third direct or wireless link **143**.

[0086] The charging station controller **150** has access to a local database **151** and wireless Internet **170** (or other) access to a remote rates and billing server **180** and to a database of account preferences **190**. This can contain ID information for prepaid Users or information on fleet accounts and the like.

[0087] The charging station **140** is supplied with electrical power from electrical mains through a power meter **160**. Power is then routed through a breaker/distribution panel **162** to the EV charging interface. Electrical power can also be supplied to other devices **163** as needed.

[0088] The monitor server **114** can communicate wirelessly **117** with a customer's **121** cellphone **120** to feed back information **110** that may be of interest to the customer. In addition, the customer can send inquiries wirelessly **117** to the monitor server **114**. Various cell towers **116** and other communication services may participate in this.

[0089] One possible drawback of system in FIG. **1** is that the telematics system **110** has information about the EV **100** that cannot be used to manage related or nearby appliances (e.g., EVSE **140**) even though those appliances are being intelligently managed (e.g., by controller **150**). The issue is that telematics systems such as **110** are typically closed.

[0090] In another embodiment, shared data, for example from an EV, may be associated with the sharing device, the originating appliance (here an EV), a general location (e.g., the general charger location), a specific EV charger, and can include a time and location stamp. There likely will be a plurality of reports containing data from other EV's that are also registered with the system and have permitted forwarding of their EV data to the aggregator. The identity of the owner of the EV is not important for data sharing and the owner can remain anonymous. However, in the fleet management embodiment, each driver and or vehicle will have a unique ID number that will be presented to the Hydra EV charging system. Of course, the driver might also have a unique ID number that can be inputted into the system via keypad, or BlueTooth or a proximity card. With this method each fleet vehicle's usage can be tracked using a unique ID and the usage data, including at least the date and time stamp and odometer reading, if available, from the EV, which can be merged and matched with the date and time stamp and kWh usage data from the Hydra EVSE system for that specific EV and that specific electrical charging event. This concept is shown in FIG. **2**.

[0091] FIG. **2** shows a block diagram of an embodiment of the present invention that couples appliance information system to an improved appliance controller. In this Figure, a setup similar to that of FIG. **1** is depicted with an EV **100** parked near a managed charging system **230** including an EVSE **140**; however, here there is a remote sharing server **204** with an independent database **205**. The User's **121** cellphone **220** can communicate wirelessly **201** with the sharing server **204** using cell towers **202** via the Internet **203** (or otherwise) as well as wirelessly **117** sending information **110** to the monitor server **114**. The sharing server **204** can also communicate via the Internet **203** (or otherwise) with the charging station controller **250**. The charging controller **250** is coupled to a local database **251**.

[0092] The behavior of the system in FIG. **2** is as follows: the user **121** provides an application in device **220** with the same credentials used to access telematics system **110** in FIG. **1**, also with credentials for accessing the user's account on the sharing server **204**. The application in device **220**. relays information from the telematics system **110** to the energy data sharing service **200**, in association with that account. The application further identifies appliance with which to share information: e.g., EVSE **140**, for example by entering an ID number or scanning an identifying barcode (not shown) on EVSE **140** and providing this to the sharing system **200** via the application running on the smartphone **220**. In this example, the information available to the controller **250** from EV **100** via the sharing connection **206** may include battery status, remaining charge required, etc. upon which control decisions may be made based on the management policies in the database **251**.

[0093] FIG. **3** shows a block diagram of another embodiment of the present invention to couple an appliance information system to an improved appliance controller. Here, there is a link **307** between the monitor or manufacturer server **114** and the sharing server **304** with its database **305**. In this case, energy data sharing system **300** obtains information from the User's **121** cellphone **320** that is wirelessly communicated **301** to the sharing server **304** and the monitor server **114**. As before, cell towers **302** and other communications infrastructure may be used. As in FIG. **2**, the sharing server **304** can communicate **306** over the Internet **303** (or otherwise) with the charging station controller **250**.

[0094] The operation of the system in FIG. **3** is that the user **121** can provide the sharing server **304** with the credentials to access information about a particular appliance (e.g., EV **100**) from the telematics system **110**. The server **304** undertakes to query the telematics system **114** using the credentials provided. Again, the user **121** uses the application on the user's phone **320** to indicate that vehicle **100** is attached to appliance (EVSE) **140** using the identity (e.g., from a barcode, not shown) of the appliance **140**. In this way, sharing system knows that the vehicle **100** is associated with the appliance **140** and can tell controller **250** (or reply to a query from controller **250**) with information about the appliance **100** obtained from the telematics system **110**.

[0095] FIG. **4** shows a flowchart **400** of an embodiment of a process of improved appliance control that uses an energy usage information sharing system. A typical embodiment has been shown in FIG. **2**. Starting at the beginning of the chart in FIG. **4**, a User device, such as a cellphone receives **402** information from a monitoring server. Then **403**, a sharing server receives first appliance information from the User device. The sharing server provides **404** information from the first appliance to an appliance controller. Finally **405**, the appliance controller can use the first appliance information to manage a second appliance and the process **400** completes. At the start, the User has established accounts with a monitoring server (e.g., telematics server **114**) and with a sharing server

(e.g., energy data sharing server **204**), and accesses the sharing server **204** to establish an association between the first appliance (EV **100**) and a second appliance (EVSE **140**), which the sharing server **204** accepts and notes, e.g., in database **205**. At step **402**, the user device **220** acquires information regarding the first appliance (EV **100**) from the monitoring server **114**. At step **403**, the sharing server **204** receives the information about the first appliance (EV **100**) from the user device **220**. At step **404**, the sharing server provides information regarding the first appliance (EV **100**) to an appliance controller **250** associated with the second appliance (EVSE **140**) on the basis of the association recorded, e.g., in database **205**. At step **405**, the appliance controller uses the first appliance information to manage the second appliance (EVSE **140**). The process completes when the association between the first and second appliances is canceled. The association can be canceled on the basis of any of many conditions, for example (and by way of example and not limitation):

[0096] User **121** disconnects the vehicle and this is noted by controller **250** via monitor signal **142**;

[0097] User **121** disconnects the vehicle and this is noted by sharing server **204** on the basis of data received from telematics server **114** via user device **220**;

[0098] Controller **250** detects from monitor signal **142** that the vehicle **100** has stopped accepting the charge (i.e., the battery is full); and

[0099] Sharing server **204** detects from the telematics information from server **114** that the vehicle **100** has stopped charging (i.e., the battery is full); Such conditions as these may be a part of the policies noted in database **251**, or elsewhere (e.g., sharing server **204**).

FIG. **5** shows a flowchart **500** of an improved embodiment. At the beginning, the sharing server receives **502** account information related to a first appliance. The sharing server registers **503** the account information with a monitoring server. The sharing server then receives **504** first appliance information from the monitoring server. The sharing server provides **505** the first appliance information to an appliance controller. The appliance controller uses **506** the first appliance information to manage a second appliance.

FIG. **5** is a flowchart for an improved process for appliance control **500** that uses an energy usage information sharing system **300** having a direct connection **307** to a telematics server **114** as shown in FIG. **3** (rather than an indirect one, as in FIG. **2** through device **220**).

At the start of the process, the user has established accounts with a monitoring server (e.g., telematics server **114**) and with a sharing server (e.g., energy data sharing server **304**), and accesses the sharing server **304** to establish an association between the first appliance (EV **100**) and a second appliance (EVSE **140**), which the sharing server **304** accepts and notes, e.g., in database **305**.

At step **502**, the sharing server **304** receives the account information from the monitoring server **114** corresponding to the first appliance (EV **100**).

At step **503**, the sharing server **304** registers with the monitoring server **114** with the account information.

At step **504**, the sharing server **304** acquires information regarding the first appliance (EV **100**) from the monitoring server **114**.

At step **505** (similar to step **404** in FIG. **4**), the sharing server **304** provides information regarding the first appliance (EV **100**) to an appliance controller **250** associated with the second appliance (EVSE **140**) on the basis of the association recorded, e.g., in database **305**.

At step **506** (similar to step **405** in FIG. **4**), the appliance controller uses the first appliance information to manage the second appliance (EVSE **140**).

The process completes when the association between the first and second appliances is canceled.

[0100] Aggregating data about a plurality of EV's internal states and charging times is valuable information both for administering charging services, but also for managing subsequent access, future or pending reservations, and for planning the best use of EV's and EV charging assets and utility resources over specific periods of time, also in particular, those related to aggregated load and dynamic pricing for electricity during peak demand hours.

[0101] There are various EV charging location web sites that presently contain only static information, such as how many EV chargers are at a site. Such sites would like to be able to present dynamic information, such as, how many EV chargers are being used, (which relates to how many are presently available), the SoC of currently connected EV's (which relates to how many EV chargers will soon become available), and whether there is active enforcement for motivating the removal of fully charged EV's to allow access for other EV's to charge. This may be required by certain employers who want to better manage their assets.

[0102] The present invention can also apply to any re-fueling system, such as CNG, Hydrogen, or the like in which the vehicle itself is reporting its internal data, such as ID and odometer status to a remote, data management system.

[0103] Several descriptions and illustrations have been provided to aid in understanding the present invention. A person with skill in the art will realize that numerous changes and variations may be made without departing from the spirit of the invention. Each of these changes and variations is within the scope of the present invention.

We claim:

1. A method for improved appliance management comprising:

a) receiving with a first server a first information regarding a first appliance;

b) providing with the first server the first information to an appliance controller for at least one of control and management of a second appliance;

wherein the appliance controller at least partially controls a second appliance based on the first information.

2. The method of claim **1** wherein the first information is obtained from a second server by a user-configured device and provided to the first server.

3. The method of claim **2** wherein the user-configured device is a portable handheld device.

4. The method of claim **1** further comprising:

c) receiving with the first server a second information;

d) accessing with the first server a second server using the second information;

wherein in step a) the first information is received by the first server from the second server.

5. The method of claim **4** wherein in step a) the second server is polled by the first server for the first information.

6. The method of claim **4** wherein in step a) the first information is pushed to the first server by the second server.

7. The method of claim **1** wherein the first appliance is an electric vehicle.

8. The method of claim **1** wherein the second appliance is an electric vehicle charging apparatus.

9. The method of claim **4** wherein the first server is a sharing server sharing information between a plurality of appliances.

10. A system for improved appliance management comprising:

a first appliance in data communication with a first server;

an appliance controller also in data communication with said first server, said appliance controller configured to control said first appliance;

said first server adapted to receive a first information from said first appliance and relay said first information to said appliance controller;

said appliance controller adapted to send a control command to a second appliance based on said first information.

11. The system of claim **10** wherein said first appliance is an electric vehicle.

12. The system of claim **10** wherein said second appliance is an electric vehicle charging apparatus.

13. The system of claim **10** wherein said second appliance is an electric vehicle charging apparatus.

14. The system of claim **10** further comprising a second server in data communication with said first server, said second server adapted to share said first information with a plurality of appliances.

15. The system of claim **14** further comprising an application running on a portable user device, said application adapted to provide said second server with credentials to access information about said first or second appliance.

16. The system of claim **15** wherein said application is also adapted to indicate that said first appliance is attached to or cooperating with said second appliance.

17. A system for improved appliance management comprising:

an electric vehicle (EV) in data communication with a first server;

an electric vehicle charging apparatus (EVSE) controller also in data communication with said first server, said EVSE controller configured to control said EVSE;

said first server adapted to receive a first information from said EV and relay said first information to said EVSE controller;

said EVSE controller adapted to send a control command to said EVSE based on said first information.

18. The system of claim **17** wherein said EVSE controller is adapted to send a command to said EVSE to stop charging.

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US 20140114448A1

(19) **United States**

(12) **Patent Application Publication**

Outwater et al.

(10) **Pub. No.: US 2014/0114448 A1**

(43) **Pub. Date: Apr. 24, 2014**

(54) **METHOD AND APPARATUS FOR SHARING ELECTRIC VEHICLE AND ELECTRIC APPLIANCE USAGE DATA**

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(21) Appl. No.: **13/959,838**

(22) Filed: **Aug. 6, 2013**

Related U.S. Application Data

(60) Provisional application No. 61/715,856, filed on Oct. 19, 2012.

Publication Classification

(51) **Int. Cl.**
B60L 11/18 (2006.01)

(52) **U.S. Cl.**
CPC ***B60L 11/1824*** (2013.01)
USPC **700/90**; 700/286

(57) **ABSTRACT**

A system and method allowing electric vehicle (EV) and other appliance owners to share data with other appliance owners and service providers. For an EV, data like SoC, or whether the EV is presently connected to an EV charger, can be shared through a server and database with a control system that can now know the type of vehicle that is connected to a particular EV charger. Such a system can also know when an EV owner has been notified that his EV is charging, or fully charged, and if the EV is still connected to an EV charger. Such data originates at the EV (or other appliance), is sent wirelessly to the EV manufacturer's central database, and from there is sent to, or can be requested by, the EV owner(s). Data is merged with EV charger usage data for the EV or a plurality of EV's.