

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property

Organization

International Bureau

(43) International Publication Date

12 December 2024 (12.12.2024)



(10) International Publication Number

WO 2024/254301 A2

(51) International Patent Classification:

Not classified

SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

(21) International Application Number:

PCT/US2024/032797

Published:

— without international search report and to be republished upon receipt of that report (Rule 48.2(g))

(22) International Filing Date:

06 June 2024 (06.06.2024)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

63/506,404

06 June 2023 (06.06.2023)

US

(71) Applicant: KILOWS, INC. [US/US]; 10420 E Riverside

Dr Suite 102, Bothell, Washington 98011 (US).

(72) Inventor; and

(71) Applicant: STRISOWER, John [US/US]; 15303 216th

Ave NE, Woodinville, Washington 98077 (US).

(74) Agent: CHAKRABORTY, Anuraj; 20251 Century Blvd

Ste 140, Germantown, Maryland 20874 (US).

(81) Designated States (unless otherwise indicated, for every

kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CV, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IQ, IR, IS, IT, JM, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, MG, MK, MN, MU, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every

kind of regional protection available): ARIPO (BW, CV, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SC, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, ME, MK, MT, NL, NO, PL, PT, RO, RS, SE,

(54) Title: METHODS, SYSTEMS, APPARATUSES, AND DEVICES FOR FACILITATING POWERING OF BUILDINGS WITH ENERGY SOURCES ASSOCIATED WITH THE BUILDINGS

(57) Abstract: A system for facilitating powering of buildings with energy sources includes an electric panel configured to be disposed in a location of a building. The electric panel includes an input port configured to be electrically coupled with an electrical power source, output ports configured to be electrically coupled with an electrical circuit including an electrical load, and a converter unit electrically coupled with the input port and the output ports. The converter unit is configured for receiving the electrical power input from the electrical power source, converting the electrical power input to direct current (DC) power outputs based on a command, and supplying the DC power outputs to the electrical circuit through the output ports. The electric panel includes a processing device operatively coupled with the converter unit and configured for analyzing an information, determining the output power values for the DC power outputs, and generating the command.



WO 2024/254301 A2

**METHODS, SYSTEMS, APPARATUSES, AND DEVICES FOR FACILITATING
POWERING OF BUILDINGS WITH ENERGY SOURCES ASSOCIATED WITH
THE BUILDINGS**

5

The current application claims a priority to the U.S. provisional patent application serial number 63/506,404 filed on June 6, 2023.

10

FIELD OF THE INVENTION

15

Generally, the present disclosure relates to the field of power supply and regulation systems. More specifically, the present disclosure relates to methods, systems, apparatuses, and devices for facilitating powering of buildings with energy sources associated with the buildings.

BACKGROUND OF THE INVENTION

20

The field of power supply and regulation systems is technologically important to several industries, business organizations, and/or individuals. In particular, the use of power supply and regulation systems is prevalent for facilitating powering of buildings with energy sources associated with the buildings.

25

Local energy, which is renewably generated (solar and wind) and consumed, by a home or community, provides self-reliance and strong economic benefits while helping global ecology through increased efficiency, pollution reduction, and decarbonization.

30

Electric utilities with monopoly control across the country have strong economic incentives to prevent local energy development and deployment. These electric utilities were once needed to provide reliable and economically feasible energy to consumers who had no other way to do it themselves. Today local energy can be less expensive, more efficient, and more reliable than utility-provided energy. Electric utilities have for decades been able to effectively block citizens from enjoying the benefits of local energy with monopolistic power, economic strength, and political access.

For years, the electrical circuitry of power systems and the application to provide people with electrical power has been the same. Over a long period of time, innovation is needed for improvement and efficiency. In addition, the current circuitry and power systems are heavily favored by authorities that are in charge of the power system such as electrical companies. However, the development of using renewable energy is gradually gaining attention and becoming more used. Power and energy generated and consumed locally, by a home or community, utilizing renewable energy sources like solar and wind, promotes independence and has substantial economic benefits while also benefiting the environment by improving productivity, cutting emissions, and decarbonizing the atmosphere. Strong financial incentives exist for electric utilities with nationwide monopoly power to thwart the development and use of local energy sources. These electric utilities were once required to supply clients with energy who had no other option with dependable and financially viable energy. Electric utilities have had the monopoly authority, financial clout, and political connections to successfully squeeze money out of citizens for simply providing electric power.

Existing techniques for facilitating powering of buildings with energy sources associated with the buildings are deficient with regard to several aspects. For instance, current technologies do not provide decentralization of power generation. As a result, different technology is needed for providing decentralization of power generation. Furthermore, current technologies do not support existing circuits for Direct Current voltage. As a result, different technology is needed to support existing circuits for Direct Current voltage.

Therefore, there is a need for improved methods, systems, apparatuses, and devices for facilitating powering of buildings with energy sources associated with the buildings that may overcome one or more of the above-mentioned problems and/or limitations.

SUMMARY OF THE INVENTION

This summary is provided to introduce a selection of concepts in a simplified form, that are further described below in the Detailed Description. This summary is not intended to identify key features or essential features of the claimed subject matter. Nor is this summary intended to be used to limit the claimed subject matter's scope.

Disclosed herein is a system for facilitating powering of buildings with energy sources associated with the buildings, in accordance with some embodiments. Accordingly, the system may include an electric panel configured to be disposed in at least one location of at least one building. Further, the electric panel may include at least one input port configured to be electrically coupled with at least one electrical power source. Further, the at least one electrical power source supplies at least one electrical power input. Further, the electric panel may include a plurality of output ports configured to be electrically coupled with at least one electrical circuit comprising at least one electrical load. Further, the electric panel may include at least one converter unit electrically coupled with the at least one input port and the plurality of output ports. Further, the at least one converter unit may be configured for receiving the at least one electrical power input from the at least one electrical power source through the at least one input port. Further, the at least one converter unit may be configured for converting the at least one electrical power input to at least one of a plurality of direct current (DC) power outputs based on the receiving and at least one command. Further, the plurality of DC power outputs may be associated with a plurality of output power values. Further, the at least one converter unit may be configured for supplying at least one of the plurality of DC power outputs to the at least one electrical circuit through at least one of the plurality of output ports based on the converting. Further, the electric panel may include a processing device operatively coupled with the at least one converter unit. Further, the processing device may be configured for analyzing at least one information. Further, the processing device may be configured for determining at least one of the plurality of output power values for at least one of the plurality of DC power outputs based on the analyzing of the at least one information. Further, the processing device may be configured for generating the at least one command based on the determining.

Further disclosed herein is a system for facilitating powering of buildings with energy sources associated with the buildings, in accordance with some embodiments. Accordingly, the system may include an electric panel configured to be disposed in at least one location of at least one building. Further, the electric panel may include at least one input port configured to be electrically coupled with at least one electrical power source. Further, the at least one electrical power source supplies at least one electrical power input. Further, the electric panel may include a plurality of output ports configured to be electrically coupled with at least one electrical circuit comprising at least one electrical load. Further, the electric panel may include at least one converter unit electrically coupled with the at least one input port and the plurality of output ports. Further, the at least one converter unit may be configured for

receiving the at least one electrical power input from the at least one electrical power source through the at least one input port. Further, the at least one converter unit may be configured for converting the at least one electrical power input to at least one of a plurality of direct current (DC) power outputs based on the receiving and at least one command. Further, the plurality of DC power outputs may be associated with a plurality of output power values. Further, the at least one converter unit may be configured for supplying at least one of the plurality of DC power outputs to the at least one electrical circuit through at least one of the plurality of output ports based on the converting. Further, the electric panel may include a processing device operatively coupled with the at least one converter unit. Further, the processing device may be configured for analyzing at least one information. Further, the processing device may be configured for determining at least one of the plurality of output power values for at least one of the plurality of DC power outputs based on the analyzing of the at least one information. Further, the processing device may be configured for generating the at least one command based on the determining. Further, the electric panel may include at least one additional port configured to be electrically coupled with at least one electrical device. Further, the at least one additional port may be configured for at least one of receiving and supplying at least one direct current (DC) electrical power associated with at least one power value to the at least one electrical device. Further, the electric panel may include at least one port connection unit electrically coupled with the at least one input port, at least one of the plurality of output ports, and the at least one additional port. Further, the at least one port connection unit may be configured for establishing a connection between the at least one additional port and the at least one input port for the receiving of the at least one DC electrical power from the at least one electrical device. Further, the at least one electrical power input may include the at least one DC electrical power.

Further disclosed herein is a system for facilitating powering of buildings with energy sources associated with the buildings, in accordance with some embodiments. Accordingly, the system may include an electric panel, at least one first monitoring device, and a storage device. Further, the electric panel may be configured to be disposed in at least one location of at least one building. Further, the electric panel may include at least one input port configured to be electrically coupled with at least one electrical power source. Further, the at least one electrical power source supplies at least one electrical power input. Further, the electric panel may include a plurality of output ports configured to be electrically coupled with at least one electrical circuit comprising at least one electrical load. Further, the electric panel may include at least one converter unit electrically coupled with the at least one input port and the

plurality of output ports. Further, the at least one converter unit may be configured for receiving the at least one electrical power input from the at least one electrical power source through the at least one input port. Further, the at least one converter unit may be configured for converting the at least one electrical power input to at least one of a plurality of direct current (DC) power outputs based on the receiving and at least one command. Further, the plurality of DC power outputs may be associated with a plurality of output power values. Further, the at least one converter unit may be configured for supplying at least one of the plurality of DC power outputs to the at least one electrical circuit through at least one of the plurality of output ports based on the converting. Further, the electric panel may include a processing device operatively coupled with the at least one converter unit. Further, the processing device may be configured for analyzing at least one information. Further, the processing device may be configured for determining at least one of the plurality of output power values for at least one of the plurality of DC power outputs based on the analyzing of the at least one information. Further, the processing device may be configured for generating the at least one command based on the determining. Further, the at least one first monitoring device may be coupled with at least one of the plurality of output ports. Further, the at least one first monitoring device may be configured for monitoring at least one characteristic of a power usage in the at least one electrical circuit. Further, the processing device may be configured for generating the at least one information. Further, the analyzing of the at least one information may be based on the generating of the at least one information. Further, the processing device may be configured for determining at least one power requirement of the at least one electrical circuit based on the analyzing of the at least one information. Further, the determining of at least one of the plurality of output power values for at least one of the plurality of DC power outputs may be further based on the at least one power requirement. Further, the storage device may be communicatively coupled with the processing device. Further, the storage device may be configured for storing the at least one information.

Both the foregoing summary and the following detailed description provide examples and are explanatory only. Accordingly, the foregoing summary and the following detailed description should not be considered to be restrictive. Further, features or variations may be provided in addition to those set forth herein. For example, embodiments may be directed to various feature combinations and sub-combinations described in the detailed description.

BRIEF DESCRIPTION OF THE DRAWINGS

The accompanying drawings, which are incorporated in and constitute a part of this disclosure, illustrate various embodiments of the present disclosure. The drawings contain representations of various trademarks and copyrights owned by the Applicants. In addition, the drawings may contain other marks owned by third parties and are being used for illustrative purposes only. All rights to various trademarks and copyrights represented herein, except those belonging to their respective owners, are vested in and the property of the applicants. The applicants retain and reserve all rights in their trademarks and copyrights included herein, and grant permission to reproduce the material only in connection with reproduction of the granted patent and for no other purpose.

Furthermore, the drawings may contain text or captions that may explain certain embodiments of the present disclosure. This text is included for illustrative, non-limiting, explanatory purposes of certain embodiments detailed in the present disclosure.

FIG. 1 is an illustration of an online platform consistent with various embodiments of the present disclosure.

FIG. 2 is a block diagram of a system 200 for facilitating powering of buildings with energy sources associated with the buildings, in accordance with some embodiments.

FIG. 3 is a block diagram of the system 200 for facilitating powering of buildings with energy sources associated with the buildings, in accordance with some embodiments.

FIG. 4 is a block diagram of the system 200 for facilitating powering of buildings with energy sources associated with the buildings, in accordance with some embodiments.

FIG. 5 is a block diagram of the system 200 for facilitating powering of buildings with energy sources associated with the buildings, in accordance with some embodiments.

FIG. 6 is a block diagram of the system 200 for facilitating powering of buildings with energy sources associated with the buildings, in accordance with some embodiments.

FIG. 7 is a block diagram of the system 200 for facilitating powering of buildings with energy sources associated with the buildings, in accordance with some embodiments.

FIG. 8 is a block diagram of the system 200 for facilitating powering of buildings with energy sources associated with the buildings, in accordance with some embodiments.

FIG. 9 is a block diagram of the system 200 for facilitating powering of buildings with energy sources associated with the buildings, in accordance with some embodiments.

FIG. 10 is a block diagram of the system 200 for facilitating powering of buildings with energy sources associated with the buildings, in accordance with some embodiments.

FIG. 11 is a block diagram of the system 200 for facilitating powering of buildings with energy sources associated with the buildings, in accordance with some embodiments.

FIG. 12 is a block diagram of the system 200 for facilitating powering of buildings with energy sources associated with the buildings, in accordance with some embodiments.

5 FIG. 13 is a block diagram of a system 1300 for facilitating powering of buildings with energy sources associated with the buildings, in accordance with some embodiments.

FIG. 14 is a block diagram of a system 1400 for facilitating powering of buildings with energy sources associated with the buildings, in accordance with some embodiments.

10 FIG. 15 is a block diagram of the system 1400 for facilitating powering of buildings with energy sources associated with the buildings, in accordance with some embodiments.

FIG. 16 is an illustration of a system 1600 for facilitating powering of buildings with energy sources associated with the buildings, in accordance with some embodiments.

FIG. 17 is a flowchart of a method 1700 for facilitating powering of buildings with energy sources associated with the buildings, in accordance with some embodiments.

15 FIG. 18 is an illustration of a system 1800 for facilitating powering of buildings with energy sources associated with the buildings, in accordance with some embodiments.

FIG. 19 is a block diagram of a computing device for implementing the methods disclosed herein, in accordance with some embodiments.

20

DETAILED DESCRIPTION OF THE INVENTION

As a preliminary matter, it will readily be understood by one having ordinary skill in the relevant art that the present disclosure has broad utility and application. As should be
25 understood, any embodiment may incorporate only one or a plurality of the above-disclosed aspects of the disclosure and may further incorporate only one or a plurality of the above-disclosed features. Furthermore, any embodiment discussed and identified as being “preferred” is considered to be part of a best mode contemplated for carrying out the embodiments of the present disclosure. Other embodiments also may be discussed for
30 additional illustrative purposes in providing a full and enabling disclosure. Moreover, many embodiments, such as adaptations, variations, modifications, and equivalent arrangements, will be implicitly disclosed by the embodiments described herein and fall within the scope of the present disclosure.

Accordingly, while embodiments are described herein in detail in relation to one or more embodiments, it is to be understood that this disclosure is illustrative and exemplary of the present disclosure, and are made merely for the purposes of providing a full and enabling disclosure. The detailed disclosure herein of one or more embodiments is not intended, nor is
5 to be construed, to limit the scope of patent protection afforded in any claim of a patent issuing here from, which scope is to be defined by the claims and the equivalents thereof. It is not intended that the scope of patent protection be defined by reading into any claim limitation found herein and/or issuing here from that does not explicitly appear in the claim itself.

10 Thus, for example, any sequence(s) and/or temporal order of steps of various processes or methods that are described herein are illustrative and not restrictive. Accordingly, it should be understood that, although steps of various processes or methods may be shown and described as being in a sequence or temporal order, the steps of any such processes or methods are not limited to being carried out in any particular sequence or order,
15 absent an indication otherwise. Indeed, the steps in such processes or methods generally may be carried out in various different sequences and orders while still falling within the scope of the present disclosure. Accordingly, it is intended that the scope of patent protection is to be defined by the issued claim(s) rather than the description set forth herein.

Additionally, it is important to note that each term used herein refers to that which an
20 ordinary artisan would understand such term to mean based on the contextual use of such term herein. To the extent that the meaning of a term used herein—as understood by the ordinary artisan based on the contextual use of such term—differs in any way from any particular dictionary definition of such term, it is intended that the meaning of the term as understood by the ordinary artisan should prevail.

25 Furthermore, it is important to note that, as used herein, “a” and “an” each generally denotes “at least one” but do not exclude a plurality unless the contextual use dictates otherwise. When used herein to join a list of items, “or” denotes “at least one of the items” but does not exclude a plurality of items of the list. Finally, when used herein to join a list of items, “and” denotes “all of the items of the list”.

30 The following detailed description refers to the accompanying drawings. Wherever possible, the same reference numbers are used in the drawings and the following description to refer to the same or similar elements. While many embodiments of the disclosure may be described, modifications, adaptations, and other implementations are possible. For example, substitutions, additions, or modifications may be made to the elements illustrated in the

drawings, and the methods described herein may be modified by substituting, reordering, or adding stages to the disclosed methods. Accordingly, the following detailed description does not limit the disclosure. Instead, the proper scope of the disclosure is defined by the claims found herein and/or issuing here from. The present disclosure contains headers. It should be understood that these headers are used as references and are not to be construed as limiting upon the subjected matter disclosed under the header.

The present disclosure includes many aspects and features. Moreover, while many aspects and features relate to, and are described in the context of methods, systems, apparatuses and devices for facilitating powering of buildings with energy sources associated with the buildings embodiments of the present disclosure are not limited to use only in this context.

In general, the method disclosed herein may be performed by one or more computing devices. For example, in some embodiments, the method may be performed by a server computer in communication with one or more client devices over a communication network such as, for example, the Internet. In some other embodiments, the method may be performed by one or more of at least one server computer, at least one client device, at least one network device, at least one sensor and at least one actuator. Examples of the one or more client devices and/or the server computer may include, a desktop computer, a laptop computer, a tablet computer, a personal digital assistant, a portable electronic device, a wearable computer, a smart phone, an Internet of Things (IoT) device, a smart electrical appliance, a video game console, a rack server, a super-computer, a mainframe computer, mini-computer, micro-computer, a storage server, an application server (e.g., a mail server, a web server, a real-time communication server, an FTP server, a virtual server, a proxy server, a DNS server, etc.), a quantum computer, and so on. Further, one or more client devices and/or the server computer may be configured for executing a software application such as, for example, but not limited to, an operating system (e.g., Windows, Mac OS, Unix, Linux, Android, etc.) in order to provide a user interface (e.g., GUI, touch-screen based interface, voice based interface, gesture based interface, etc.) for use by the one or more users and/or a network interface for communicating with other devices over a communication network. Accordingly, the server computer may include a processing device configured for performing data processing tasks such as, for example, but not limited to, analyzing, identifying, determining, generating, transforming, calculating, computing, compressing, decompressing, encrypting, decrypting, scrambling, splitting, merging, interpolating, extrapolating, redacting, anonymizing, encoding and decoding. Further, the server computer may include a

communication device configured for communicating with one or more external devices. The one or more external devices may include, for example, but are not limited to, a client device, a third party database, public database, a private database and so on. Further, the communication device may be configured for communicating with the one or more external devices over one or more communication channels. Further, the one or more communication channels may include a wireless communication channel and/or a wired communication channel. Accordingly, the communication device may be configured for performing one or more of transmitting and receiving of information in electronic form. Further, the server computer may include a storage device configured for performing data storage and/or data retrieval operations. In general, the storage device may be configured for providing reliable storage of digital information. Accordingly, in some embodiments, the storage device may be based on technologies such as, but not limited to, data compression, data backup, data redundancy, deduplication, error correction, data finger-printing, role based access control, and so on.

Further, one or more steps of the method disclosed herein may be initiated, maintained, controlled and/or terminated based on a control input received from one or more devices operated by one or more users such as, for example, but not limited to, an end user, an admin, a service provider, a service consumer, an agent, a broker and a representative thereof. Further, the user as defined herein may refer to a human, an animal or an artificially intelligent being in any state of existence, unless stated otherwise, elsewhere in the present disclosure. Further, in some embodiments, the one or more users may be required to successfully perform authentication in order for the control input to be effective. In general, a user of the one or more users may perform authentication based on the possession of a secret human readable secret data (e.g., username, password, passphrase, PIN, secret question, secret answer, etc.) and/or possession of a machine readable secret data (e.g., encryption key, decryption key, bar codes, etc.) and/or or possession of one or more embodied characteristics unique to the user (e.g., biometric variables such as, but not limited to, fingerprint, palm-print, voice characteristics, behavioral characteristics, facial features, iris pattern, heart rate variability, evoked potentials, brain waves, and so on) and/or possession of a unique device (e.g., a device with a unique physical and/or chemical and/or biological characteristic, a hardware device with a unique serial number, a network device with a unique IP/MAC address, a telephone with a unique phone number, a smartcard with an authentication token stored thereupon, etc.). Accordingly, the one or more steps of the method may include communicating (e.g., transmitting and/or receiving) with one or more sensor devices and/or

one or more actuators in order to perform authentication. For example, the one or more steps may include receiving, using the communication device, the secret human readable data from an input device such as, for example, a keyboard, a keypad, a touch-screen, a microphone, a camera and so on. Likewise, the one or more steps may include receiving, using the
5 communication device, the one or more embodied characteristics from one or more biometric sensors.

Further, one or more steps of the method may be automatically initiated, maintained and/or terminated based on one or more predefined conditions. In an instance, the one or more predefined conditions may be based on one or more contextual variables. In general, the
10 one or more contextual variables may represent a condition relevant to the performance of the one or more steps of the method. The one or more contextual variables may include, for example, but are not limited to, location, time, identity of a user associated with a device (e.g., the server computer, a client device, etc.) corresponding to the performance of the one or more steps, environmental variables (e.g., temperature, humidity, pressure, wind speed,
15 lighting, sound, etc.) associated with a device corresponding to the performance of the one or more steps, physical state and/or physiological state and/or psychological state of the user, physical state (e.g., motion, direction of motion, orientation, speed, velocity, acceleration, trajectory, etc.) of the device corresponding to the performance of the one or more steps and/or semantic content of data associated with the one or more users. Accordingly, the one
20 or more steps may include communicating with one or more sensors and/or one or more actuators associated with the one or more contextual variables. For example, the one or more sensors may include, but are not limited to, a timing device (e.g., a real-time clock), a location sensor (e.g., a GPS receiver, a GLONASS receiver, an indoor location sensor, etc.), a biometric sensor (e.g., a fingerprint sensor), an environmental variable sensor (e.g.,
25 temperature sensor, humidity sensor, pressure sensor, etc.) and a device state sensor (e.g., a power sensor, a voltage/current sensor, a switch-state sensor, a usage sensor, etc. associated with the device corresponding to performance of the one or more steps).

Further, the one or more steps of the method may be performed one or more number of times. Additionally, the one or more steps may be performed in any order other than as
30 exemplarily disclosed herein, unless explicitly stated otherwise, elsewhere in the present disclosure. Further, two or more steps of the one or more steps may, in some embodiments, be simultaneously performed, at least in part. Further, in some embodiments, there may be one or more time gaps between performance of any two steps of the one or more steps.

Further, in some embodiments, the one or more predefined conditions may be specified by the one or more users. Accordingly, the one or more steps may include receiving, using the communication device, the one or more predefined conditions from one or more and devices operated by the one or more users. Further, the one or more predefined conditions may be stored in the storage device. Alternatively, and/or additionally, in some embodiments, the one or more predefined conditions may be automatically determined, using the processing device, based on historical data corresponding to performance of the one or more steps. For example, the historical data may be collected, using the storage device, from a plurality of instances of performance of the method. Such historical data may include performance actions (e.g., initiating, maintaining, interrupting, terminating, etc.) of the one or more steps and/or the one or more contextual variables associated therewith. Further, machine learning may be performed on the historical data in order to determine the one or more predefined conditions. For instance, machine learning on the historical data may determine a correlation between one or more contextual variables and performance of the one or more steps of the method. Accordingly, the one or more predefined conditions may be generated, using the processing device, based on the correlation.

Further, one or more steps of the method may be performed at one or more spatial locations. For instance, the method may be performed by a plurality of devices interconnected through a communication network. Accordingly, in an example, one or more steps of the method may be performed by a server computer. Similarly, one or more steps of the method may be performed by a client computer. Likewise, one or more steps of the method may be performed by an intermediate entity such as, for example, a proxy server. For instance, one or more steps of the method may be performed in a distributed fashion across the plurality of devices in order to meet one or more objectives. For example, one objective may be to provide load balancing between two or more devices. Another objective may be to restrict a location of one or more of an input data, an output data and any intermediate data therebetween corresponding to one or more steps of the method. For example, in a client-server environment, sensitive data corresponding to a user may not be allowed to be transmitted to the server computer. Accordingly, one or more steps of the method operating on the sensitive data and/or a derivative thereof may be performed at the client device.

Overview

The present disclosure provides a uniquely designed electrical power system. The present invention provides an electrical power system that is used to bring electrical energy to

the users. The present invention provides an electrical power system that does not involve an authoritative figure or leading company that charges the users for monetary gains.

Furthermore, the present invention provides a system used to supply electrical energy that is free of charge. The present invention comprises a uniquely designed system of circuitry for electrical power systems.

The present disclosure is initiated with renewable energy sources. Solar and wind energy are just two examples of renewable energy sources. Solar/photovoltaic panels and wind turbines are used to gather solar and wind energy, respectively. Direct current is produced by converting solar and wind energy (DC). The DC is then transmitted to a transfer switch after being passed via an inverter for alternating current (AC). An AC panel and an electric company domain will both receive power from the transfer switch. The electric provider will have the choice to route the power either back to the transfer switch or to the AC panel at their discretion. The energy is then provided using the electrical power. After that, the electrical energy is delivered to an energy storage facility, like a power plant.

Renewable energy sources like solar energy and wind energy will also be used to provide electricity for the energy storage location. All types of DC loads and appliances will get electrical energy from the energy storage facility via a DC-to-DC converter. Appliances and DC loads might be any device that uses electricity. The use of electrical power for any DC loads and appliances can be enabled or disabled by controlling the energy storage using a remote control and/or software program. By using vehicle-to-load capabilities, the energy storage facility can also deliver and transfer electrical power to electric cars (EVs).

An objective of the present disclosure is to provide a uniquely designed electrical power system. The present invention provides an electrical power system that is used to bring electrical energy to the users. The present invention provides an electrical power system that does not involve an authoritative figure or leading company that charges the users for monetary gains. Furthermore, the present invention provides a system used to supply electrical energy that is free of charge.

The present disclosure describes the deployment of local energy across the world with zero, or nearly zero, electric utility or regulatory control. It further defines a future system and method of powering homes, communities, businesses, and industries with local energy far more efficiently. Finally, it discloses the systems and methods of gradual conversion to direct current (DC) lighting, appliances, and systems that will eventually obsolete the alternating current (AC) electric grid. In essence, this is an entire local energy electrical

generation and distribution ecosystem including a planned transition from current utility company-provided AC/grid-connected electrical energy.

Further, any interconnection of an electric generation capability (renewable or not) into an electric utility user's ("ratepayer's") electric distribution panel must be signed off by their electric utility. Appropriate safety measures must be taken into consideration because electricity could backflow onto the electric grid and potentially disrupt the electricity supply for other users and/or create a safety hazard for electric line maintenance personnel. Also, these generation capabilities must be engineered into the larger utility/grid supply/demand system. So called "net-metering" utility approved solar and wind generation systems ("behind the meter" - BTM) literally spin the meter backward and thereby provide retail price credit for generated energy. As such, any additions of solar or wind, or other generation are tightly controlled and regulated by the electric utility. These systems face difficult and time consuming processes with added costs that stifle innovation and do-it-yourself (DIY) systems development.

This disclosure claims a system and method for eliminating all of these bottlenecks while creating an exciting and entirely new industrial ecosystem that will enable and foster intense economic and technological development – called as Hybrid Home Energy (H2E).

Further, the disclosure describes a parallel electric panel to existing home/business distribution panel next to/near the central utility-powered Alternating Current (AC) panel and a new Central Common Bus Panel - strictly Direct Current (DC) (500 VDC circuits) which allows for a gradual transition from AC circuits to DC circuits within a home/business using existing *Romex* wiring/circuits. Once the new Central Common Bus Panel is installed and AC circuits are repurposed to DC circuits that are no longer connected to the utility-provided service (or only connected via AC-DC converter powering DC panel). Further, the new Central Common Bus Panel may include an AC-DC converter with 500 VDC output to DC Panel 500 VDC common bus, a DC-DC converters in DC panel providing automatic load balancing across different DC voltage segment buses in panel (5, 12, 24, 48, 100 & 500) DC-coupled renewable generation, solar, wind, hydrogen fuel cells, batteries, etc. connected to the central DC common bus panel 500 VDC. Further, the disclosure describes equivalent DC appliances for all applications that use AC today which are more efficient, more reliable, and less expensive. Further, the 500 VDC is adequate to provide needed power level for all applications without need for multiple voltages, plugs, etc. For example, 110/120, 208, 220/240, 480.

Further, a tech stack including updatable firmware and software promise to add incredible flexibility, customization, remote control, and data acquisition gathering hoards of important AI-enabling data can help us all improve efficiency further and reduce carbon and pollution footprint can be coupled with the new Central Common Bus Panel Provides
5 consumer with an incremental building block system pathway to gradually, incrementally, and safely, transition to complete self-reliance and energy independence Eventually all new construction and remodels will use DC only systems as disclosed herein.

Further, the disclosure describes a Specific Hybrid Home Energy (H2E). Further, the H2E provides existing consumer pathway and products for cost effective incremental
10 transition from grid/utility AC reliance to self-reliance, renewable energy, DC energy powered life H2E Panel electronic interface. Further, the disclosure describes remote cloud app access for monitoring, data acquisition, and operational control including switching, dimming & programming.

Further, the disclosure describes a method for converting existing circuit wiring Using
15 circuit to DC compatible circuits. The method includes identifying wire extensions, using simple snap-on circuit extenders in fixed length segments (18" for example) to increase length of wires, color coding for VDC of circuit Numbered for identification of DC Panel Common Bus interconnection location, using 2-4 conductors (ground bare or Green plus up to three Red, White and Black), and alternatively, locating the new H2E Panel where existing
20 circuits are routed into the existing AC panel will allow adequate circuit wiring length for simplistic and efficient conversion.

Further, the disclosure describes *Kilows* local energy system for education, laboratory (labs), and distribution. The disclosure describes using *Kilows* location for education, distribution, and labs. Further, the disclosure describes to double the number of EV pavilions
25 for this purpose (Tech Showcase). Further, the disclosure describes demonstration systems "Genius Bar" type personnel as pre or post sales experts. Further, the disclosure describes Electric Vehicle (EV) charging, vehicle to home supply (V2H), and Vehicle to Load (V2L) supply. Further, the disclosure describes using wind/solar, hydrogen fuel cells, etc. as source. Further, the disclosure describes new tech/ emerging tech. Further, the disclosure describes
30 complete H2E line, panels, wiring harnesses, DC appliances, LED lighting, and receptacles. Further, the disclosure describes the use of smart breakers, AC to DC inverters while on-grid connection. Further, the present disclosure describes that AC-DC converters may not need any legal approval. Further, the present disclosure describes that the DC to AC converter may require legal approvals.

Further, the present disclosure describes H2E DC panel. Further, the H2E DC panel may comprise smart breakers, remote access unit, and power meters. Further, the disclosure describes an incremental modular system providing controlled migration to future DC world without any utility control. Further, the present disclosure describes for creating community to build systems. Further, the present disclosure describes repurposing existing circuits by mounting panels nearby, replacing bad receptacle/appliance. Further, the disclosure describes the continuous operation of existing utility regulated power domain, transitioning one circuit at a time without utility connection. Further, the present disclosure describes that the energy sources at the starting of the transition may or may not include renewable sources.

FIG. 1 is an illustration of an online platform 100 consistent with various embodiments of the present disclosure. By way of non-limiting example, the online platform 100 to facilitate powering of buildings with energy sources associated with the buildings may be hosted on a centralized server 102, such as, for example, a cloud computing service. The centralized server 102 may communicate with other network entities, such as, for example, a mobile device 106 (such as a smartphone, a laptop, a tablet computer, etc.), other electronic devices 110 (such as desktop computers, server computers, etc.), databases 114, sensors 116, a system 118 (such as a system 200, a system 1300, a system 1600, a system 1800, etc.) over a communication network 104, such as, but not limited to, the Internet. Further, users of the online platform 100 may include relevant parties such as, but not limited to, end-users, administrators, service providers, service consumers, and so on. Accordingly, in some instances, electronic devices operated by the one or more relevant parties may be in communication with the platform.

A user 112, such as the one or more relevant parties, may access online platform 100 through a web based software application or browser. The web based software application may be embodied as, for example, but not be limited to, a website, a web application, a desktop application, and a mobile application compatible with a computing device 1900.

FIG. 2 is a block diagram of a system 200 for facilitating powering of buildings with energy sources associated with the buildings, in accordance with some embodiments. Accordingly, the system 200 may include an electric panel 202 configured to be disposed in at least one location of at least one building. Further, the system 200 may include an electric power system, a home hybrid energy (H2E) system, etc. Further, the at least one location may include a location proximal to a junction box, an existing AC panel, etc. of the at least one building. Further, the at least one building may include a house, a facility, an apartment, etc. Further, the electric panel 202 may include a home hybrid energy (H2E) panel. Further, the

electric panel 202 may include an enclosure configured to encompass electrical components configured to control and monitor a plurality of electromechanical processes. Further, the electric panel 202 may include at least one input port 204, a plurality of output ports 206, at least one converter unit 208, and a processing device 210.

5 Further, the at least one input port 204 may be configured to be electrically coupled with at least one electrical power source 302, as shown in FIG. 3. Further, the at least one input port 204 may comprise a pair of terminals for electrically connecting with the at least one electrical power source 302. Further, the at least one electrical power source 302 supplies at least one electrical power input. Further, the at least one electrical power source 302 may
10 be configured for generating electrical power. Further, the supplying of the at least one electrical power input may be based on the generating of the electrical power. Further, the at least one electrical power source 302 may include a renewable electrical energy generating device, a non-renewable electrical energy generating device, an alternating current (AC) grid, an alternating current (AC) panel, etc. Further, the at least one electrical power source 302
15 may include an electrical energy generating device (such as solar (photovoltaic) panels, wind turbines, solar thermal systems, tidal turbines, steam turbines, etc.). Further, the electrical energy generating device harvests at least one of solar energy, wind energy, heat energy, geothermal energy, tidal energy, etc., for generating the electrical power. Further, the at least one electrical power input may include an electric power. Further, the electric power may
20 include Alternating Current (AC) power, Direct Current (DC) power, etc.

Further, the plurality of output ports 206 may be configured to be electrically coupled with at least one electrical circuit. Further, the plurality of output ports 206 may include a plurality of terminals configured for connecting with the at least one electrical circuit. Further, the at least one electrical circuit may include at least one electrical load. Further, the
25 at least one electrical circuit may be composed of electrical components connected to form a continuous conducting path. Further, the at least one electrical load may include a household electrical appliance, an electric vehicle, an industrial electrical appliance, an electrical appliance (such as refrigerators, air conditioners, washing machines, etc.), an electrical device (such as lighting fixtures, fans, etc.), an electronic device (such as televisions, computers,
30 etc.), an electrical equipment (such as motors, pumps, etc.), etc. Further, the at least one input port 204 and the plurality of output ports 206 may be associated with at least one bus for establishing electrical connection.

Further, the at least one converter unit 208 may be electrically coupled with the at least one input port 204 and the plurality of output ports 206. Further, the at least one

converter unit 208 may be configured for receiving the at least one electrical power input from the at least one electrical power source 302 through the at least one input port 204.

Further, the at least one converter unit 208 may be configured for converting the at least one electrical power input to at least one of a plurality of direct current (DC) power outputs based on the receiving and at least one command. Further, the at least one command may include an instruction for performing a task. Further, the plurality of DC power outputs may be associated with a plurality of output power values. Further, the plurality of output power values may include a plurality of voltage values, for example, 5 Volt DC, 12 Volt DC, 24 Volt DC, 48 Volt DC, 100 Volt DC, 500 Volt DC, etc. Further, the at least one converter unit 208 may be configured for supplying at least one of the plurality of DC power outputs to the at least one electrical circuit through at least one of the plurality of output ports 206 based on the converting. Further, the at least one converter unit 208 may include a plurality of power converters. Further, each of the plurality of power converters may be electrically coupled with each of the plurality of output ports 206 and the at least one input port 204. Further, the plurality of power converters may include a power rectifier, a switched mode power supply, a linear power supply, a buck boost converter, a flyback converter, a forward converter, a full bridge converter, etc. Further, the at least one converter unit 208 may include a rectifier, a buck-boost converter, etc. Further, the at least one converter unit 208 may be a unidirectional converter, a bidirectional converter, etc.

Further, the processing device 210 may be operatively coupled with the at least one converter unit 208. Further, the processing device 210 may be a power controller. Further, the processing device 210 may be configured for analyzing at least one information. Further, the at least one information may include at least one power consumption of the at least one electrical load, at least one operation of the at least one electrical load, at least one power supply duration for the at least one electrical load, etc. Further, the at least one information may include a required intensity of application of an appliance, for example, rotational speed of a motor, intensity of lighting of a bulb, etc. Further, the processing device 210 may be configured for determining at least one of the plurality of output power values for at least one of the plurality of DC power outputs based on the analyzing of the at least one information. Further, the processing device 210 may be configured for generating the at least one command based on the determining.

Further, in some embodiments, the at least one electrical power source 302 may include at least one alternating current (AC) power source 304, as shown in FIG. 3. Further, the at least one alternating current (AC) power source 304 may include an alternator, an

alternating current (AC) grid, etc. Further, the at least one electrical power input may include at least one alternating current (AC) power input. Further, the converting of the at least one electrical power input to the plurality of DC power outputs may include converting the at least one AC power input to the plurality of DC power outputs. Further, the plurality of DC output power values may include a plurality of voltage values, for example, 5 Volt DC, 12 Volt DC, 24 Volt DC, 48 Volt DC, 100 Volt DC, and 500 Volt DC.

Further, in an embodiment, the at least one converter unit 208 may include at least one alternating current (AC) to direct current (DC) converter unit 402 and at least one direct current (DC) to direct current (DC) converter unit 404, as shown in FIG. 4. Further, the at least one AC to DC converter unit 402 may include a power rectifier, a switched mode power supply, a linear power supply, etc. Further, the at least one direct current (DC) to direct current (DC) converter unit 404 may include a DC-DC converter, for example, a buck boost converter, a flyback converter, a forward converter, a full bridge converter, etc. Further, the at least one AC to DC converter unit 402 may be electrically coupled with the at least one input port 204. Further, the at least one AC to DC converter unit 402 may be configured for converting the at least one AC power input to at least one DC power output. Further, the at least one DC to DC converter unit 404 may be electrically coupled with the at least one AC to DC converter unit 402. Further, the at least one DC to DC converter unit 404 may be configured for converting the at least one DC power output to the plurality of DC power outputs. Further, the converting of the at least one AC power input to the plurality of DC power outputs may be based on the converting of the at least one AC power input to the at least one DC power output and the converting of the at least one DC power output to the plurality of DC power outputs.

Further, in some embodiments, the at least one electrical power source 302 may include at least one direct current (DC) power source 502, as shown in FIG. 5. Further, the at least one direct current (DC) power source 502 may include a solar panel, a wind turbine, a battery, etc. Further, the at least one electrical power input may include at least one DC power input. Further, the at least one converter unit 208 may include at least one direct current (DC) to direct current (DC) converter unit 504, as shown in FIG. 5. Further, the converting of the at least one electrical power input to the plurality of DC power outputs may include converting the at least one DC power input to the plurality of DC power outputs.

Further, in some embodiments, the at least one converter unit 208 may include a plurality of components 602, as shown in FIG. 6. Further, the plurality of components 602 may include a resistance, a capacitor, an inductor, an electrical network comprising

resistances, capacitors, and inductors, a diode, a transistor, etc. Further, each of the plurality of components 602 may be associated with a plurality of values. Further, the plurality of values may include resistance, capacitance, inductance, impedance, forward voltage drop, reverse breakdown voltage, peak inverse voltage, etc. Further, a value from the plurality of values may be selected for each of the plurality of components 602 based on the at least one command. Further, the converting of the at least one electrical power input to the plurality of direct current (DC) power outputs may be based on the value selected for each of the plurality of components 602. Further, the plurality of components 602 may include digital variable resistors, digital variable capacitors, digital variable inductors, digital variable diodes, digital variable transistors, etc. Further, the plurality of components 602 may be electrically actuated based on the at least one command for selecting the value from the plurality of values.

Further, in some embodiments, the electrical panel 202 may include at least one additional port 702, at least one electrical device 704, and at least one port connection unit 706, as shown in FIG. 7. Further, the at least one additional port 702 may include a pair of terminals configured for connecting the at least one electrical device 704 with the at least one converter unit 208. Further, the at least one port connection unit 706 may include an electromechanical device, for example, a transfer switch, etc. configured for establishing a connection between the at least one additional port 702 and at least one input port 204. Further, the at least one port connection unit 706 may be an electrically actuated switch (such as an electrically actuated transfer switch). Further, the at least one electrical device 704 may include an electric vehicle, a battery, an energy storage device, etc. Further, the at least one additional port 702 may be configured to be electrically coupled with the at least one electrical device 704. Further, the at least one additional port 702 may be configured for at least one of receiving and supplying at least one direct current (DC) electrical power associated with at least one power value to the at least one electrical device 704. Further, the at least one additional port 702 may be electrically coupled with at least one of the at least one input port 204 and at least one of the plurality of output ports 206 through the at least one port connection unit 706. Further, the at least one power value may correspond to a state of charge of the electric vehicle and the battery. Further, the at least one power value may include a voltage level, a current level, etc. Further, the at least one port connection unit 706 may be electrically coupled with the at least one input port 204, at least one of the plurality of output ports 206, and the at least one additional port 702. Further, the at least one port connection unit 706 may be configured for establishing a connection between the at least one additional port 702 and the at least one input port 204 for the receiving of the at least one DC

electrical power from the at least one electrical device 704. Further, the connection may include an electric connection. Further, the at least one electrical power input may include the at least one DC electrical power.

Further, in an embodiment, the at least one port connection unit 706 may be
5 configured for establishing a connection between the at least one additional port 702 and at least one of the plurality of output ports 206 for the supplying of the at least one DC electrical power to the at least one electrical device 704. Further, the connection may include an electrical connection. Further, at least one of the plurality of DC power outputs may include the at least one DC electrical power. Further, the at least one electrical device 704 may be
10 charged based on the supplying of the at least one DC electrical power.

Further, in an embodiment, the at least one power value of the at least one DC electric power may include 500 volts direct current (DC).

Further, in some embodiments, the system 200 may include at least one input device 802, as shown in FIG. 8. Further, the at least one input device 802 may be communicatively
15 coupled with the processing device 210. Further, the at least one input device 802 may include a user interface device, a touch screen, a keypad, a smartphone, a tablet, a laptop, etc. Further, the at least one input device 802 may be configured for generating the at least one information based on at least one user input received by the at least one input device 802. Further, the at least one user input may include a text, a mechanical input, a gesture, a touch,
20 etc. Further, the analyzing of the at least one information may be based on the generating of the at least one information.

Further, in some embodiments, the system 200 may include at least one first monitoring device 902, and a storage device 904, as shown in FIG. 9. Further, the at least one first monitoring device 902 may include at least one sensor (such as a current sensor, a
25 voltage sensor, an impedance sensor, a smart power meter, a current transformer, a voltage transformer, an energy meter, a data logger, a harmonic analyzer, a transient recorder, a smartphone, a laptop, a pc, etc. Further, the at least one first monitoring device 902 may be coupled with at least one of the plurality of output ports 206. Further, the at least one first monitoring device 902 may be configured for monitoring at least one characteristic of a
30 power usage in the at least one electrical circuit. Further, the at least one characteristic may include a power consumption, a load profile, a transient behavior, a harmonic distortion, etc. Further, the processing device 210 may be communicatively coupled with the at least one first monitoring device 902. Further, the processing device 210 may be configured for generating the at least one information based on the monitoring. Further, the analyzing of the

at least one information may be based on the generating of the at least one information. Further, the processing device 210 may be configured for determining at least one power requirement of the at least one electrical circuit based on the analyzing of the at least one information. Further, the at least one power requirement may include a required power value, a required current value, a required voltage value, a required time duration, a power requirement schedule, etc. Further, the determining of at least one of the plurality of output power values for at least one of the plurality of DC power outputs may be based on the at least one power requirement. Further, the storage device 904 may be communicatively coupled with the processing device 210. Further, the storage device 904 may be configured for storing the at least one information.

Further, in an embodiment, the storage device 904 may be configured for retrieving a plurality of historical information associated with a historical power usage in the at least one electrical circuit. Further, the plurality of historical information may include an information associated with the power usage in a historical time duration. Further, the processing device 210 may be configured for analyzing the plurality of historical information and the at least one information using at least one machine learning model. Further, the at least one machine learning model may be configured for detecting at least one of a pattern, a correlation, and a dependency in the plurality of historical information and the at least one information. Further, the at least one machine learning model may be configured for analyzing at least one of the pattern, the correlation, and the dependency. Further, the determining of the at least one power requirement may include determining the at least one power requirement using the at least one machine learning model based on the analyzing of at least one of the pattern, the correlation, and the dependency. Further, the at least one machine learning model may include at least one of a recurrent neural network and a long short term memory network. Further, the at least one machine learning model may include a sequence to sequence architecture.

Further, in some embodiments, the at least one input port 204 may be associated with a plurality of input ports 1002. Further, the at least one electrical power source 302 may be associated with a plurality of electrical power sources 1004, as shown in FIG. 10. Further, the plurality of input ports 1002 may be configured to be electrically coupled with the plurality of electrical power sources 1004. Further, the system 200 may include at least one electrical coupling unit 1006, as shown in FIG. 10. Further, the at least one electrical coupling unit 1006 may be electrically coupled with the plurality of input ports 1002 and the at least one converter unit 208. Further, the plurality of input ports 1002 may be electrically coupled with

the at least one converter unit 208 through the at least one electrical coupling unit 1006.

Further, the at least one electrical coupling unit 1006 may include an electrically actuated transfer switch. Further, the at least one electrical coupling unit 1006 may be configured for electrically coupling the at least one input port 204 of the plurality of input ports 1002 to the
5 at least one converter unit 208. Further, the receiving of the at least one electrical power input may be based on the electrically coupling.

Further, in an embodiment, the system 200 may include at least one second monitoring device 1102, as shown in FIG. 11. Further, the at least one second monitoring device 1102 may include a current sensor, a voltage sensor, a power meter, a voltage
10 transformer, an energy meter, a data logger, a harmonic analyzer, an oscilloscope (transient recorder), a smartphone, a multi-meter, a laptop, a pc, etc. Further, the at least one second monitoring device 1102 may be communicatively coupled with the plurality of input ports 1002. Further, the at least one second monitoring device 1102 may be configured for monitoring at least one characteristic of a power supply of the plurality of electrical power
15 sources 1004. Further, the at least one characteristic of the power supply may include a voltage level, a current level, a ripple, a noise, an electrical power level, a supply duration, etc. Further, the processing device 210 may be communicatively coupled with the at least one second monitoring device 1102. Further, the processing device 210 may be configured for generating a plurality of supply information associated with the plurality of electrical power
20 sources 1004 based on the monitoring of the at least one characteristic of the power supply. Further, the plurality of supply information may include a voltage value, a current value, an electrical power quality, an electrical power consistency, an electrical power reliability, etc. Further, the processing device 210 may be configured for obtaining at least one footprint information associated with a pollution footprint of the plurality of electrical power sources
25 1004. Further, the at least one footprint information may include a carbon-emission footprint, a pollutant emission footprint, etc. for using the plurality of electrical power sources 1004 for receiving electrical power inputs from the plurality of electrical power sources 1004. Further, the processing device 210 may be configured for obtaining at least one power requirement associated with the at least one electrical circuit electrically coupled with at least one of the
30 plurality of output ports 206. Further, the at least one power requirement may include a voltage requirement over a particular current value for a particular duration with a particular power quality and a particular power reliability. Further, the processing device 210 may be configured for analyzing the plurality of supply information, the at least one footprint information, and the at least one power requirement. Further, the processing device 210 may

be configured for identifying the at least one electrical power source 302 from the plurality of electrical power sources 1004 based on the analyzing of the plurality of supply information, the at least one footprint information, and the at least one power requirement. Further, the processing device 210 may be configured for identifying the at least one electrical power source 302 from the plurality of electrical power sources 1004 based on the analyzing of the plurality of supply information, the at least one footprint information, and the at least one power requirement. Further, the processing device 210 may be configured for generating at least one coupling command for the at least one electrical coupling unit 1006 based on the identifying of the at least one electrical power source 302. Further, the at least one coupling command may include an instruction for connecting the at least one electrical power source 302. Further, the at least one electrical coupling unit 1006 may be operatively coupled with the processing device 210. Further, the electrically coupling of the at least one input port 204 of the plurality of input ports 1002 to the at least one converter unit 208 may be further based on the at least one coupling command.

Further, in some embodiments, the system 200 may include at least one communication device 1202, as shown in FIG. 12. Further, the at least one communication device 1202 may be communicatively coupled with the processing device 210. Further, the at least one communication device 1202 may be configured for receiving the at least one information from at least one user device over at least one wireless communication channel. Further, the at least one user device may include a smartphone, a PC, a laptop, etc. Further, the at least one wireless communication channel may include Bluetooth, Wi-Fi, Infrared, etc.

FIG. 3 is a block diagram of the system 200 for facilitating powering of buildings with energy sources associated with the buildings, in accordance with some embodiments.

FIG. 4 is a block diagram of the system 200 for facilitating powering of buildings with energy sources associated with the buildings, in accordance with some embodiments.

FIG. 5 is a block diagram of the system 200 for facilitating powering of buildings with energy sources associated with the buildings, in accordance with some embodiments.

FIG. 6 is a block diagram of the system 200 for facilitating powering of buildings with energy sources associated with the buildings, in accordance with some embodiments.

FIG. 7 is a block diagram of the system 200 for facilitating powering of buildings with energy sources associated with the buildings, in accordance with some embodiments.

FIG. 8 is a block diagram of the system 200 for facilitating powering of buildings with energy sources associated with the buildings, in accordance with some embodiments.

FIG. 9 is a block diagram of the system 200 for facilitating powering of buildings with energy sources associated with the buildings, in accordance with some embodiments.

FIG. 10 is a block diagram of the system 200 for facilitating powering of buildings with energy sources associated with the buildings, in accordance with some embodiments.

5 FIG. 11 is a block diagram of the system 200 for facilitating powering of buildings with energy sources associated with the buildings, in accordance with some embodiments.

FIG. 12 is a block diagram of the system 200 for facilitating powering of buildings with energy sources associated with the buildings, in accordance with some embodiments.

10 FIG. 13 is a block diagram of a system 1300 for facilitating powering of buildings with energy sources associated with the buildings, in accordance with some embodiments. Accordingly, the system 1300 may include an electric panel 1302 configured to be disposed in at least one location of at least one building. Further, the at least one location may include location near to junction box. Further, the electric panel 1302 may include an enclosure configured to encompass electrical components configured to control and monitor a plurality
15 of electromechanical processes. Further, the electric panel 1302 may include at least one input port 1304, a plurality of output ports 1306, at least one converter unit 1308, a processing device 1310, at least one additional port 1312, and at least one port connection unit 1314.

Further, the at least one input port 1304 may be configured to be electrically coupled
20 with at least one electrical power source. Further, the at least one input port 1304 may comprise a pair of terminal configured for connecting an electrical circuit to another electrical circuit. Further, the at least one electrical power source supplies at least one electrical power input. Further, the at least one electrical power source may be configured for generating electrical power. Further, the at least one electrical power source may include renewable
25 energy source and non-renewable sources of energy, for example, solar, wind, thermal, nuclear, electric vehicle, etc. Further, the at least one electrical power input may include an electric current. Further, the electric current may include an Alternating Current (AC), and a Direct Current (DC).

Further, the plurality of output ports 1306 may be configured to be electrically
30 coupled with at least one electrical circuit may include at least one electrical load. Further, the plurality of output ports 1306 may comprise a plurality of terminals configured for connecting the at least one converter unit 1308 to other electrical circuits. Further, the at least one electrical circuit may include at least one electrical load. Further, the at least one electrical circuit may be composed of electrical components connected to form a continuous

conducting path. Further, the at least one electrical load may include a household appliance, an electric vehicle, an industrial appliance, etc.

Further, the at least one converter unit 1308 may be electrically coupled with the at least one input port 1304 and the plurality of output ports 1306. Further, the at least one
5 converter unit 1308 may be configured for receiving the at least one electrical power input from the at least one electrical power source through at least one input port 1304. Further, the at least one converter unit 1308 may be configured for converting the at least one electrical power input to at least one of a plurality of direct current (DC) power outputs based on the receiving and at least one command. Further, the at least one command may include an
10 instruction for performing a task. Further, the plurality of DC power outputs may be associated with a plurality of output power values. Further, the plurality of output power values may include a plurality of voltage values, for example, 5 Volt DC, 12 Volt DC, 24 Volt DC, 48 Volt DC, 100 Volt DC, and 500 Volt DC. Further, the at least one converter unit 1308 may be configured for supplying at least one of the plurality of DC power outputs to the
15 at least one electrical circuit through at least one of the plurality of output ports 1306 based on the converting. Further, the at least one converter unit 1308 may include a rectifier, a buck-boost converter, etc.

Further, the processing device 1310 may be operatively coupled with the at least one converter unit 1308. Further, the processing device 1310 may be configured for analyzing at
20 least one information. Further, the at least one information may include a required intensity of application of an appliance, for example, rotational speed of a motor, intensity of lighting of a bulb, etc. Further, the processing device 1310 may be configured for determining at least one of the plurality of output power values for at least one of the plurality of DC power outputs based on the analyzing of the at least one information. Further, the processing device 1310
25 may be configured for generating the at least one command based on the determining.

Further, the at least one additional port 1312 may be configured to be electrically coupled with at least one electrical device 1316. Further, the at least one additional port 1312 may include a pair of terminal configured for connecting the at least one electrical device 1316 to the at least one converter unit 1308. Further, the at least one additional port 1312 may
30 include an electromechanical device, for example, a transfer switch, etc. Further, the at least one additional port 1312 may be configured for at least one of receiving and supplying at least one direct current (DC) electrical power associated with at least one power value to the at least one electrical device 1316. Further, the at least one electrical device 1316 may include an electric vehicle, a battery, etc.

Further, the at least one port connection unit 1314 may be electrically coupled with the at least one input port 1304, at least one of the plurality of output ports 1306, and the at least one additional port 1312. Further, the at least one port connection unit 1314 may be configured for establishing a connection between the at least one additional port 1312 and the at least one input port 1304 for the receiving of the at least one DC electrical power from the at least one electrical device 1316. Further, the at least one electrical power input may include the at least one DC electrical power.

Further, in some embodiments, the at least one port connection unit 1314 may be further configured for establishing a connection between the at least one additional port 1312 and at least one of the plurality of output ports 1306 for the supplying of the at least one DC electrical power to the at least one electrical device 1316. Further, at least one of the plurality of DC power outputs may include the at least one DC electrical power.

Further, in an embodiment, the at least one power value of the at least one DC electrical power may include 500 volts direct current (DC)

FIG. 14 is a block diagram of a system 1400 for facilitating powering of buildings with energy sources associated with the buildings, in accordance with some embodiments. Accordingly, the system 1400 may include an electric panel 1402, at least one first monitoring device 1404, and a storage device 1406.

Further, the electric panel 1402 may be configured to be disposed in at least one location of at least one building. Further, the electric panel 1402 may include an enclosure configured to encompass electrical components configured to control and monitor a plurality of electromechanical processes. Further, the at least one location may include a location near to junction box. Further, the electric panel 1402 may include at least one input port 1408 configured to be electrically coupled with at least one electrical power source. Further, the at least one input port 1408 may comprise a pair of terminal configured for connecting an electrical circuit to another electrical circuit. Further, the at least one electrical power source supplies at least one electrical power input. Further, the at least one electrical power source may be configured for generating electrical power. Further, the at least one electrical power source may include renewable energy source and non-renewable sources of energy, for example, solar, wind, thermal, nuclear, electric vehicle, etc. Further, the electric panel 1402 may include a plurality of output ports 1410 configured to be electrically coupled with at least one electrical circuit may include at least one electrical load. Further, the electric panel 1402 may include at least one converter unit 1412 electrically coupled with the at least one input port 1408 and the plurality of output ports 1410. Further, the at least one converter unit

1412 may be configured for receiving the at least one electrical power input from the at least one electrical power source through the at least one input port 1408. Further, the at least one electrical power input may include an electric current. Further, the electric current may include an Alternating Current (AC), and a Direct Current (DC). Further, the at least one converter unit 1412 may be configured for converting the at least one electrical power input to at least one of a plurality of direct current (DC) power outputs based on the receiving and at least one command. Further, the plurality of DC power outputs may be associated with a plurality of output power values. Further, the at least one converter unit 1412 may be configured for supplying at least one of the plurality of DC power outputs to the at least one electrical circuit through at least one of the plurality of output ports 1410 based on the converting. Further, the at least one electrical circuit may include at least one electrical load. Further, the at least one electrical circuit may be composed of electrical components connected to form a continuous conducting path. Further, the at least one electrical load may include a household appliance, an electric vehicle, an industrial appliance, etc. Further, the electric panel 1402 may include a processing device 1416 operatively coupled with the at least one converter unit 1412. Further, the processing device 1416 may be configured for analyzing at least one information. Further, the processing device 1416 may be configured for determining at least one of the plurality of output power values for at least one of the plurality of DC power outputs based on the analyzing of the at least one information. Further, the processing device 1416 may be configured for generating the at least one command based on the determining.

Further, the at least one first monitoring device 1404 may be coupled with at least one of the plurality of output ports 1410. Further, the at least one first monitoring device 1404 may include a smartphone, a laptop, a PC, etc. Further, the at least one first monitoring device 1404 may be configured for monitoring at least one characteristic of a power usage in the at least one electrical circuit. Further, the processing device 1416 may be communicatively coupled with the at least one first monitoring device 1404. Further, the processing device 1416 may be configured for generating the at least one information. Further, the analyzing of the at least one information may be based on the generating of the at least one information. Further, the processing device 1416 may be configured for determining at least one power requirement of the at least one electrical circuit based on the analyzing of the at least one information. Further, the determining of at least one of the plurality of output power values for at least one of the plurality of DC power outputs may be further based on the at least one power requirement.

Further, the storage device 1406 may be communicatively coupled with the processing device 1416. Further, the storage device 1406 may be configured for storing the at least one information.

Further, in some embodiments, the storage device 1406 may be further configured for retrieving a plurality of historical information associated with a historical power usage in the at least one electrical circuit. Further, the plurality of historical information may include power consumption data of the at least one electrical circuit associated with a particular time. Further, the processing device 1416 may be further configured for analyzing the plurality of historical information and the at least one information using at least one machine learning model. Further, the at least one machine learning model may be configured for detecting at least one of a pattern, a correlation, and a dependency in the plurality of historical information and the at least one information. Further, the at least one machine learning model may be configured for analyzing at least one of the pattern, the correlation, and the dependency. Further, the determining of the at least one power requirement may include determining the at least one power requirement using the at least one machine learning model based on the analyzing of at least one of the pattern, the correlation, and the dependency. Further, the at least one machine learning model may include at least one of a recurrent neural network and a long short term memory network. Further, the at least one machine learning model may include a sequence to sequence architecture.

Further, in some embodiments, the system 1400 may include at least one input device 1502, as shown in FIG. 15. Further, the at least one input device 1502 may include a smartphone, a tablet, a laptop, etc. Further, the at least one input device 1502 may be communicatively coupled with the processing device 1416. Further, the at least one input device 1502 may be configured for generating the at least one information based on at least one user input received by the at least one input device 1502. Further, the at least one user input may include a text, a mechanical input. Further, the analyzing of the at least one information may be based on the generating of the at least one information.

FIG. 15 is a block diagram of the system 1400 for facilitating powering of buildings with energy sources associated with the buildings, in accordance with some embodiments.

FIG. 16 is an illustration of a system 1600 for facilitating powering of buildings with energy sources associated with the buildings, in accordance with some embodiments. Accordingly, the system 1600 may include a plurality of electrical sources 1602-1608, at least one energy storage device 1610, a conversion panel 1612, a first conversion panel (H2E

panel) 1614, a metering device 1616, an alternating current (AC) panel 1618, a power integrator unit 1620, a plurality of loads 1622, and an AC inverter 1624.

Further, the plurality of electrical sources 1602-1608 may include solar panels 1602, wind turbines 1604, electrical vehicles 1606, and a utility power grid 1608. Further, the plurality of electrical sources 1602-1608 may be configured for generating electrical energy. Further, the solar panels 1602, wind turbines 1604, and electric vehicles 1606 may be electrically coupled with the at least one energy storage device 1610. Further, the solar panels 1602, the wind turbines 1604, and the electric vehicles 1606 may be configured for supplying the electrical energy to the at least one energy storage device 1610. Further, the electric vehicles 1606 may be configured for receiving the electrical energy from the at least one energy storage device 1610.

Further, the at least one energy storage device 1610 may be configured for receiving the electrical energy from the plurality of energy sources 1602-1608. Further, the at least one energy storage device 1610 may be configured for storing the electrical energy based on the receiving. Further, the at least one energy storage device 1610 may be configured for supplying a plurality of Direct Current (DC) outputs. Further, the plurality of DC outputs may be associated with at least one electrical characteristic.

Further, the conversion panel 1612 may be electrically coupled with at least one of a plurality of DC outputs. Further, the conversion panel 1612 may be configured for receiving the electrical energy from the at least one energy storage device 1610. Further, the conversion panel 1612 may be one way panel and/or two way panel. Further, the conversion panel 1612 may be configured for converting an AC input to a DC output and a DC input to an AC output. Further, the conversion panel 1612 may be configured for supplying electrical energy to the at least one energy storage device 1610.

Further, the first conversion panel 1614 may be electrically coupled with at least one plurality of DC outputs. Further, the first conversion panel 1614 may be configured for receiving at least one of the plurality of DC outputs with at least one electrical characteristic. Further, the first conversion panel 1614 may be configured for converting at least one of the plurality of DC outputs to a plurality of DC outputs. Further, each of the plurality of DC outputs may be associated with an output electrical characteristic. Further, the output electrical characteristic may be modifiable. Further, the output characteristic may include voltage. Further, each of the plurality of DC outputs may be configured to supply DC to the plurality of loads 1622.

Further, the metering device 1616 may be operatively coupled with the utility power grid 1608, the power integrator unit 1620, and the AC panel 1618. Further, the metering device 1616 may be configured for analyzing a direction and amount of flow of electric current. Further, the metering device 1616 may be configured for storing at least one data
5 associated with the direction and amount of flow of electric current.

Further, the power integrator unit 1620 may be operatively coupled with the AC inverter 1624 configured for converting DC input from a solar panel 1626 and a windmill 1628. Further, the power integrator unit may be configured for receiving electrical input from a plurality of sources and supplying the electrical input to a plurality of equipment.

10 FIG. 17 is a flowchart of a method 1700 for facilitating powering of buildings with energy sources associated with the buildings, in accordance with some embodiments. Accordingly, at 1702 the method 1700 may include receiving renewable energy such as solar energy and wind energy. Further, the receiving of the energy at 1702 may include receiving electrical energy from an electric vehicle, vehicle to load (V2L), as demonstrated in step
15 1714.

Further, at 1704 the method 1700 may include Direct Current (DC) going through an Alternating Current (AC) converter. Further, the step 1704 the method 1700 may include converting DC to AC based on the receiving in step 1702.

20 Further, at 1706 the method 1700 may include receiving the AC based on the converting in step 1704 in a transfer switch. Further, the transfer switch may be configured for supplying the AC current to the electric company domain and AC panel. Further, the transfer switch may be further configured for receiving electric current from energy storage and the electric company domain, as demonstrated in step 1712 and 1708.

25 Further, at 1708 the method 1700 may include the electric company domain configured for receiving the electric current from the transfer switch. Further, the electric company domain may be further configured for supplying the electric current to the AC panel and the transfer switch.

30 Further, at 1710 the method 1700 may include the AC panel configured for receiving the electric current from the electric company domain, the energy storage, and the transfer switch. Further, the AC panel may be configured for supplying the electric current to the energy storage.

Further, at 1712 the method 1700 may include the energy storage configured for storing the electric current, and DC current based on the receiving. Further, the energy

storage may be further configured for supplying electrical energy to appliances of users and the electric vehicle, as demonstrated in steps 1714-1716.

FIG. 18 is an illustration of a system 1800 for facilitating powering of buildings with energy sources associated with the buildings, in accordance with some embodiments.

5 Accordingly, the system 1800 may include a plurality of energy sources 1802-1804, at least one energy storage device 1806, a conversion panel 1808, a plurality of electrical appliances 1810-1812, an electric vehicle 1814, and a plurality of output ports 1816-1826.

Further, the plurality of energy sources 1802-1804 may be configured for generating electrical energy. Further, the electrical energy may include a Direct Current (DC). Further,
10 the plurality of energy sources 1802-1804 may include renewable energy sources, for example, solar panels, wind turbines, etc.

Further, the at least one energy storage device 1806 may be electrically coupled with the plurality of energy sources 1802-1804 and the conversion panel 1808. Further, the at least one energy storage device 1806 may be configured for receiving the electrical energy from
15 the plurality of energy sources 1802-1804 and the conversion panel 1808. Further, the at least one energy storage device 1806 may include a capacitor, a battery, etc.

Further, the at least one energy storage device 1806 may be configured for storing the electrical energy based on the receiving.

Further, the conversion panel 1808 may include a DC conversion panel. Further, the
20 conversion panel 1808 may be electrically coupled with the at least one energy storage device 1806. Further, the conversion panel 1808 may be configured for receiving the electrical energy from the at least one energy storage device 1806. Further, the conversion panel 1808 may be configured for converting the electrical energy to a plurality of DC outputs based on the receiving of the electrical energy.

Further, the plurality of output ports 1816-1826 may be electrically coupled with the
25 conversion panel 1808. Further, the plurality of output ports 1816-1826 may be configured for supplying the plurality of DC outputs. Further, each of the plurality of output ports 1816-1826 may be configured for supplying at least one of the plurality of DC output with at least one DC characteristic. Further, the at least one DC characteristic may include voltage,
30 current, frequency, etc. Further, the voltage may include 5 VDC, 12 VDC, 24 VDC, 48 VDC, 100 VDC, and 500 VDC.

Further, the plurality of electrical appliances 1810-1812 may be electrically coupled with the conversion panel 1808. Further, the plurality of electrical appliances 1810-1812 may

include household appliances, industrial appliances, etc. Further, the plurality of electrical appliances 1810-1812 may be configured to operate on 500volt DC.

Further, the electric vehicle 1814 may be configured for receiving 500volt DC from the conversion unit 1808. Further, the electric vehicle 1814 may be configured for supplying
5 an electric current to the conversion unit 1808.

With reference to FIG. 19, a system consistent with an embodiment of the disclosure may include a computing device or cloud service, such as computing device 1900. In a basic configuration, computing device 1900 may include at least one processing unit 1902 and a system memory 1904. Depending on the configuration and type of computing device, system
10 memory 1904 may comprise, but is not limited to, volatile (e.g., random-access memory (RAM)), non-volatile (e.g., read-only memory (ROM)), flash memory, or any combination. System memory 1904 may include operating system 1905, one or more programming modules 1906, and may include a program data 1907. Operating system 1905, for example, may be suitable for controlling computing device 1900's operation. In one embodiment,
15 programming modules 1906 may include image-processing module, machine learning module. Furthermore, embodiments of the disclosure may be practiced in conjunction with a graphics library, other operating systems, or any other application program and is not limited to any particular application or system. This basic configuration is illustrated in FIG. 19 by those components within a dashed line 1908.

Computing device 1900 may have additional features or functionality. For example,
20 computing device 1900 may also include additional data storage devices (removable and/or non-removable) such as, for example, magnetic disks, optical disks, or tape. Such additional storage is illustrated in FIG. 19 by a removable storage 1909 and a non-removable storage 1910. Computer storage media may include volatile and non-volatile, removable and non-
25 removable media implemented in any method or technology for storage of information, such as computer-readable instructions, data structures, program modules, or other data. System memory 1904, removable storage 1909, and non-removable storage 1910 are all computer storage media examples (i.e., memory storage.) Computer storage media may include, but is not limited to, RAM, ROM, electrically erasable read-only memory (EEPROM), flash
30 memory or other memory technology, CD-ROM, digital versatile disks (DVD) or other optical storage, magnetic cassettes, magnetic tape, magnetic disk storage or other magnetic storage devices, or any other medium which can be used to store information and which can be accessed by computing device 1900. Any such computer storage media may be part of device 1900. Computing device 1900 may also have input device(s) 1912 such as a keyboard,

a mouse, a pen, a sound input device, a touch input device, a location sensor, a camera, a biometric sensor, etc. Output device(s) 1914 such as a display, speakers, a printer, etc. may also be included. The aforementioned devices are examples and others may be used.

Computing device 1900 may also contain a communication connection 1916 that may
5 allow device 1900 to communicate with other computing devices 1918, such as over a network in a distributed computing environment, for example, an intranet or the Internet. Communication connection 1916 is one example of communication media. Communication media may typically be embodied by computer readable instructions, data structures, program modules, or other data in a modulated data signal, such as a carrier wave or other transport
10 mechanism, and includes any information delivery media. The term “modulated data signal” may describe a signal that has one or more characteristics set or changed in such a manner as to encode information in the signal. By way of example, and not limitation, communication media may include wired media such as a wired network or direct-wired connection, and wireless media such as acoustic, radio frequency (RF), infrared, and other wireless media.
15 The term computer readable media as used herein may include both storage media and communication media.

As stated above, a number of program modules and data files may be stored in system memory 1904, including operating system 1905. While executing on processing unit 1902, programming modules 1906 (e.g., application 1920) may perform processes including, for
20 example, one or more stages of methods, algorithms, systems, applications, servers, databases as described above. The aforementioned process is an example, and processing unit 1902 may perform other processes. Other programming modules that may be used in accordance with embodiments of the present disclosure may include machine learning applications.

Generally, consistent with embodiments of the disclosure, program modules may
25 include routines, programs, components, data structures, and other types of structures that may perform particular tasks or that may implement particular abstract data types. Moreover, embodiments of the disclosure may be practiced with other computer system configurations, including hand-held devices, general purpose graphics processor-based systems, multiprocessor systems, microprocessor-based or programmable consumer electronics,
30 application specific integrated circuit-based electronics, minicomputers, mainframe computers, and the like. Embodiments of the disclosure may also be practiced in distributed computing environments where tasks are performed by remote processing devices that are linked through a communications network. In a distributed computing environment, program modules may be located in both local and remote memory storage devices.

Furthermore, embodiments of the disclosure may be practiced in an electrical circuit comprising discrete electronic elements, packaged or integrated electronic chips containing logic gates, a circuit utilizing a microprocessor, or on a single chip containing electronic elements or microprocessors. Embodiments of the disclosure may also be practiced using
5 other technologies capable of performing logical operations such as, for example, AND, OR, and NOT, including but not limited to mechanical, optical, fluidic, and quantum technologies. In addition, embodiments of the disclosure may be practiced within a general-purpose computer or in any other circuits or systems.

Embodiments of the disclosure, for example, may be implemented as a computer
10 process (method), a computing system, or as an article of manufacture, such as a computer program product or computer readable media. The computer program product may be a computer storage media readable by a computer system and encoding a computer program of instructions for executing a computer process. The computer program product may also be a propagated signal on a carrier readable by a computing system and encoding a computer
15 program of instructions for executing a computer process. Accordingly, the present disclosure may be embodied in hardware and/or in software (including firmware, resident software, micro-code, etc.). In other words, embodiments of the present disclosure may take the form of a computer program product on a computer-usable or computer-readable storage medium having computer-usable or computer-readable program code embodied in the medium for use
20 by or in connection with an instruction execution system. A computer-usable or computer-readable medium may be any medium that can contain, store, communicate, propagate, or transport the program for use by or in connection with the instruction execution system, apparatus, or device.

The computer-usable or computer-readable medium may be, for example but not
25 limited to, an electronic, magnetic, optical, electromagnetic, infrared, or semiconductor system, apparatus, device, or propagation medium. More specific computer-readable medium examples (a non-exhaustive list), the computer-readable medium may include the following: an electrical connection having one or more wires, a portable computer diskette, a random-access memory (RAM), a read-only memory (ROM), an erasable programmable read-only
30 memory (EPROM or Flash memory), an optical fiber, and a portable compact disc read-only memory (CD-ROM). Note that the computer-usable or computer-readable medium could even be paper or another suitable medium upon which the program is printed, as the program can be electronically captured, via, for instance, optical scanning of the paper or other

medium, then compiled, interpreted, or otherwise processed in a suitable manner, if necessary, and then stored in a computer memory.

Embodiments of the present disclosure, for example, are described above with reference to block diagrams and/or operational illustrations of methods, systems, and computer program products according to embodiments of the disclosure. The functions/acts noted in the blocks may occur out of the order as shown in any flowchart. For example, two blocks shown in succession may in fact be executed substantially concurrently or the blocks may sometimes be executed in the reverse order, depending upon the functionality/acts involved.

While certain embodiments of the disclosure have been described, other embodiments may exist. Furthermore, although embodiments of the present disclosure have been described as being associated with data stored in memory and other storage mediums, data can also be stored on or read from other types of computer-readable media, such as secondary storage devices, like hard disks, solid state storage (e.g., USB drive), or a CD-ROM, a carrier wave from the Internet, or other forms of RAM or ROM. Further, the disclosed methods' stages may be modified in any manner, including by reordering stages and/or inserting or deleting stages, without departing from the disclosure.

Although the present disclosure has been explained in relation to its preferred embodiment, it is to be understood that many other possible modifications and variations can be made without departing from the spirit and scope of the disclosure.

What is claimed is:

1. A system for facilitating powering of buildings with energy sources associated with the buildings, the system comprising:

an electric panel configured to be disposed in at least one location of at least one building, wherein the electric panel comprises:

at least one input port configured to be electrically coupled with at least one electrical power source, wherein the at least one electrical power source supplies at least one electrical power input;

a plurality of output ports configured to be electrically coupled with at least one electrical circuit comprising at least one electrical load;

at least one converter unit electrically coupled with the at least one input port and the plurality of output ports, wherein the at least one converter unit is configured for:

receiving the at least one electrical power input from the at least one electrical power source through the at least one input port;

converting the at least one electrical power input to at least one of a plurality of direct current (DC) power outputs based on the receiving and at least one command, wherein the plurality of DC power outputs is associated with a plurality of output power values; and

supplying at least one of the plurality of DC power outputs to the at least one electrical circuit through at least one of the plurality of output ports based on the converting; and

a processing device operatively coupled with the at least one converter unit, wherein the processing device is configured for:

analyzing at least one information;

determining at least one of the plurality of output power values for at least one of the plurality of DC power outputs based on the analyzing of the at least one information; and

generating the at least one command based on the determining.

2. The system of claim 1, wherein the at least one electrical power source comprises at least one alternating current (AC) power source, wherein the at least one electrical power input comprises at least one alternating current (AC) power input, wherein the

converting of the at least one electrical power input to the plurality of DC power outputs comprises converting the at least one AC power input to the plurality of DC power outputs.

- 5 3. The system of claim 2, wherein the at least one converter unit comprises:
- at least one alternating current (AC) to direct current (DC) converter unit electrically coupled with the at least one input port, wherein the at least one AC to DC converter unit is configured for converting the at least one AC power input to at least one DC power output; and
- 10 at least one direct current (DC) to direct current (DC) converter unit electrically coupled with the at least one AC to DC converter unit, wherein the at least one DC to DC converter unit is configured for converting the at least one DC power output to the plurality of DC power outputs, wherein the converting of the at least one AC power input to the plurality of DC power outputs is based on the converting of the
- 15 at least one AC power input to the at least one DC power output and the converting of the at least one DC power output to the plurality of DC power outputs.
4. The system of claim 1, wherein the at least one electrical power source comprises at least one direct current (DC) power source, wherein the at least one electrical power
- 20 input comprises at least one direct current (DC) power input, wherein the at least one converter unit comprises at least one direct current (DC) to direct current (DC) converter unit, wherein the converting of the at least one electrical power input to the plurality of DC power outputs comprises converting the at least one DC power input to the plurality of DC power outputs.
- 25 5. The system of claim 1, wherein the at least one converter unit comprises a plurality of components, wherein each of the plurality of components is associated with a plurality of values, wherein a value from the plurality of values is selected for each of the plurality of components based on the at least one command, wherein the
- 30 converting of the at least one electrical power input to the plurality of direct current (DC) power outputs is further based on the value selected for each of the plurality of components.
6. The system of claim 1, wherein the electrical panel further comprises:

at least one additional port configured to be electrically coupled with at least one electrical device, wherein the at least one additional port is configured for at least one of receiving and supplying at least one direct current (DC) electrical power associated with at least one power value to the at least one electrical device; and

5 at least one port connection unit electrically coupled with the at least one input port, at least one of the plurality of output ports, and the at least one additional port, wherein the at least one port connection unit is configured for establishing a connection between the at least one additional port and the at least one input port for the receiving of the at least one DC electrical power from the at least one electrical
10 device, wherein the at least one electrical power input comprises the at least one DC electrical power.

7. The system of claim 6, wherein the at least one port connection unit is further configured for establishing a connection between the at least one additional port and
15 at least one of the plurality of output ports for the supplying of the at least one DC electrical power to the at least one electrical device, wherein at least one of the plurality of DC power outputs comprises the at least one DC electrical power.

8. The system of claim 6, wherein the at least one power value of the at least one DC
20 electrical power comprises 500 volts direct current (DC).

9. The system of claim 1 further comprising at least one input device communicatively coupled with the processing device, wherein the at least one input device is configured for generating the at least one information based on at least one user input
25 received by the at least one input device, wherein the analyzing of the at least one information is based on the generating of the at least one information.

10. The system of claim 1 further comprising:

30 at least one first monitoring device coupled with at least one of the plurality of output ports, wherein the at least one first monitoring device is configured for monitoring at least one characteristic of a power usage in the at least one electrical circuit, wherein the processing device is communicatively coupled with the at least one first monitoring device, wherein the processing device is configured for:

generating the at least one information based on the monitoring, wherein the analyzing of the at least one information is based on the generating of the at least one information; and

determining at least one power requirement of the at least one electrical circuit based on the analyzing of the at least one information, wherein the determining of at least one of the plurality of output power values for at least one of the plurality of DC power outputs is further based on the at least one power requirement; and

a storage device communicatively coupled with the processing device, wherein the storage device is configured for storing the at least one information.

11. The system of claim 10, wherein the storage device is further configured for retrieving a plurality of historical information associated with a historical power usage in the at least one electrical circuit, wherein the processing device is further configured for analyzing the plurality of historical information and the at least one information using at least one machine learning model, wherein the at least one machine learning model is configured for:

detecting at least one of a pattern, a correlation, and a dependency in the plurality of historical information and the at least one information; and

analyzing at least one of the pattern, the correlation, and the dependency, wherein the determining of the at least one power requirement comprises determining the at least one power requirement using the at least one machine learning model based on the analyzing of at least one of the pattern, the correlation, and the dependency, wherein the at least one machine learning model comprises at least one of a recurrent neural network and a long short term memory network, wherein the at least one machine learning model comprises a sequence to sequence architecture.

12. The system of claim 1, wherein the at least one input port is associated with a plurality of input ports, wherein the at least one electrical power source is associated with a plurality of electrical power sources, wherein the plurality of input ports is configured to be electrically coupled with the plurality of electrical power sources, wherein the system further comprises at least one electrical coupling unit electrically coupled with the plurality of input ports and the at least one converter unit, wherein the at least one electrical coupling unit is configured for electrically coupling the at least one input port of the plurality of input ports to the at least one converter unit,

wherein the receiving of the at least one electrical power is further based on the electrically coupling.

13. The system of claim 12 further comprising at least one second monitoring device coupled with the plurality of input ports, wherein the at least one second monitoring device is configured for monitoring at least one characteristic of a power supply of the plurality of electrical power sources, wherein the processing device is communicatively coupled with the at least one second monitoring device, wherein the processing device is configured for:

generating a plurality of supply information associated with the plurality of electrical power sources based on the monitoring of the at least one characteristic of the power supply;

obtaining at least one footprint information associated with a pollution footprint of the plurality of electrical power sources;

obtaining at least one power requirement associated with the at least one electrical circuit electrically coupled with at least one of the plurality of output ports;

analyzing the plurality of supply information, the at least one footprint information, and the at least one power requirement;

identifying the at least one electrical power source from the plurality of electrical power sources based on the analyzing of the plurality of supply information, the at least one footprint information, and the at least one power requirement; and

generating at least one coupling command for the at least one electrical coupling unit based on the identifying of the at least one electrical power source, wherein the at least one electrical coupling unit is operatively coupled with the processing device, wherein the electrically coupling of the at least one input port of the plurality of input ports to the at least one converter unit is further based on the at least one coupling command.

14. The system of claim 1 further comprising at least one communication device communicatively coupled with the processing device, wherein the at least one communication device is configured for receiving the at least one information from at least one user device over at least one wireless communication channel.

15. A system for facilitating powering of buildings with energy sources associated with the buildings, the system comprising:

an electric panel configured to be disposed in at least one location of at least one building, wherein the electric panel comprises:

at least one input port configured to be electrically coupled with at least one electrical power source, wherein the at least one electrical power source supplies at least one electrical power input;

a plurality of output ports configured to be electrically coupled with at least one electrical circuit comprising at least one electrical load;

at least one converter unit electrically coupled with the at least one input port and the plurality of output ports, wherein the at least one converter unit is configured for:

receiving the at least one electrical power input from the at least one electrical power source through the at least one input port;

converting the at least one electrical power input to at least one of a plurality of direct current (DC) power outputs based on the receiving and at least one command, wherein the plurality of DC power outputs is associated with a plurality of output power values; and

supplying at least one of the plurality of DC power outputs to the at least one electrical circuit through at least one of the plurality of output ports based on the converting;

a processing device operatively coupled with the at least one converter unit, wherein the processing device is configured for:

analyzing at least one information;

determining at least one of the plurality of output power values for at least one of the plurality of DC power outputs based on the analyzing of the at least one information; and

generating the at least one command based on the determining;

at least one additional port configured to be electrically coupled with at least one electrical device, wherein the at least one additional port is configured for at least one of receiving and supplying at least one direct current (DC) electrical power associated with at least one power value to the at least one electrical device; and

at least one port connection unit electrically coupled with the at least one input port, at least one of the plurality of output ports, and the at least one additional port, wherein the at least one port connection unit is configured for establishing a connection between the at least one additional port and the at least one input port for the receiving of the at least one DC electrical power from the at least one electrical device, wherein the at least one electrical power input comprises the at least one DC electrical power.

16. The system of claim 15, wherein the at least one port connection unit is further configured for establishing a connection between the at least one additional port and at least one of the plurality of output ports for the supplying of the at least one DC electrical power to the at least one electrical device, wherein at least one of the plurality of DC power outputs comprises the at least one DC electrical power.

17. The system of claim 16, wherein the at least one power value of the at least one DC electrical power comprises 500 volts direct current (DC).

18. A system for facilitating powering of buildings with energy sources associated with the buildings, the system comprising:

an electric panel configured to be disposed in at least one location of at least one building, wherein the electric panel comprises:

at least one input port configured to be electrically coupled with at least one electrical power source, wherein the at least one electrical power source supplies at least one electrical power input;

a plurality of output ports configured to be electrically coupled with at least one electrical circuit comprising at least one electrical load;

at least one converter unit electrically coupled with the at least one input port and the plurality of output ports, wherein the at least one converter unit is configured for:

receiving the at least one electrical power input from the at least one electrical power source through the at least one input port;

converting the at least one electrical power input to at least one of a plurality of direct current (DC) power outputs based on the receiving and at least one command, wherein the plurality of DC

power outputs is associated with a plurality of output power values;
and

supplying at least one of the plurality of DC power outputs to
the at least one electrical circuit through at least one of the plurality of
output ports based on the converting;

a processing device operatively coupled with the at least one converter
unit, wherein the processing device is configured for:

analyzing at least one information;

determining at least one of the plurality of output power values
for at least one of the plurality of DC power outputs based on the
analyzing of the at least one information; and

generating the at least one command based on the determining;

at least one first monitoring device coupled with at least one of the plurality of
output ports, wherein the at least one first monitoring device is configured for
monitoring at least one characteristic of a power usage in the at least one electrical
circuit, wherein the processing device communicatively coupled with the at least one
first monitoring device, wherein the processing device is configured for:

generating the at least one information based on the monitoring,
wherein the analyzing of the at least one information is based on the
generating of the at least one information; and

determining at least one power requirement of the at least one
electrical circuit based on the analyzing of the at least one information,
wherein the determining of at least one of the plurality of output power values
for at least one of the plurality of DC power outputs is further based on the at
least one power requirement; and

a storage device communicatively coupled with the processing device,
wherein the storage device is configured for storing the at least one information.

19. The system of claim 18, wherein the storage device is further configured for retrieving
a plurality of historical information associated with a historical power usage in the at
least one electrical circuit, wherein the processing device is further configured for
analyzing the plurality of historical information and the at least one information using
at least one machine learning model, wherein the at least one machine learning model
is configured for:

detecting at least one of a pattern, a correlation, and a dependency in the plurality of historical information and the at least one information; and

analyzing at least one of the pattern, the correlation, and the dependency, wherein the determining of the at least one power requirement comprises determining the at least one power requirement using the at least one machine learning model based on the analyzing of at least one of the pattern, the correlation, and the dependency, wherein the at least one machine learning model comprises at least one of a recurrent neural network and a long short term memory network, wherein the at least one machine learning model comprises a sequence to sequence architecture.

20. The system of claim 18 further comprising at least one input device communicatively coupled with the processing device, wherein the at least one input device is configured for generating the at least one information based on at least one user input received by the at least one input device, wherein the analyzing of the at least one information is based on the generating of the at least one information.

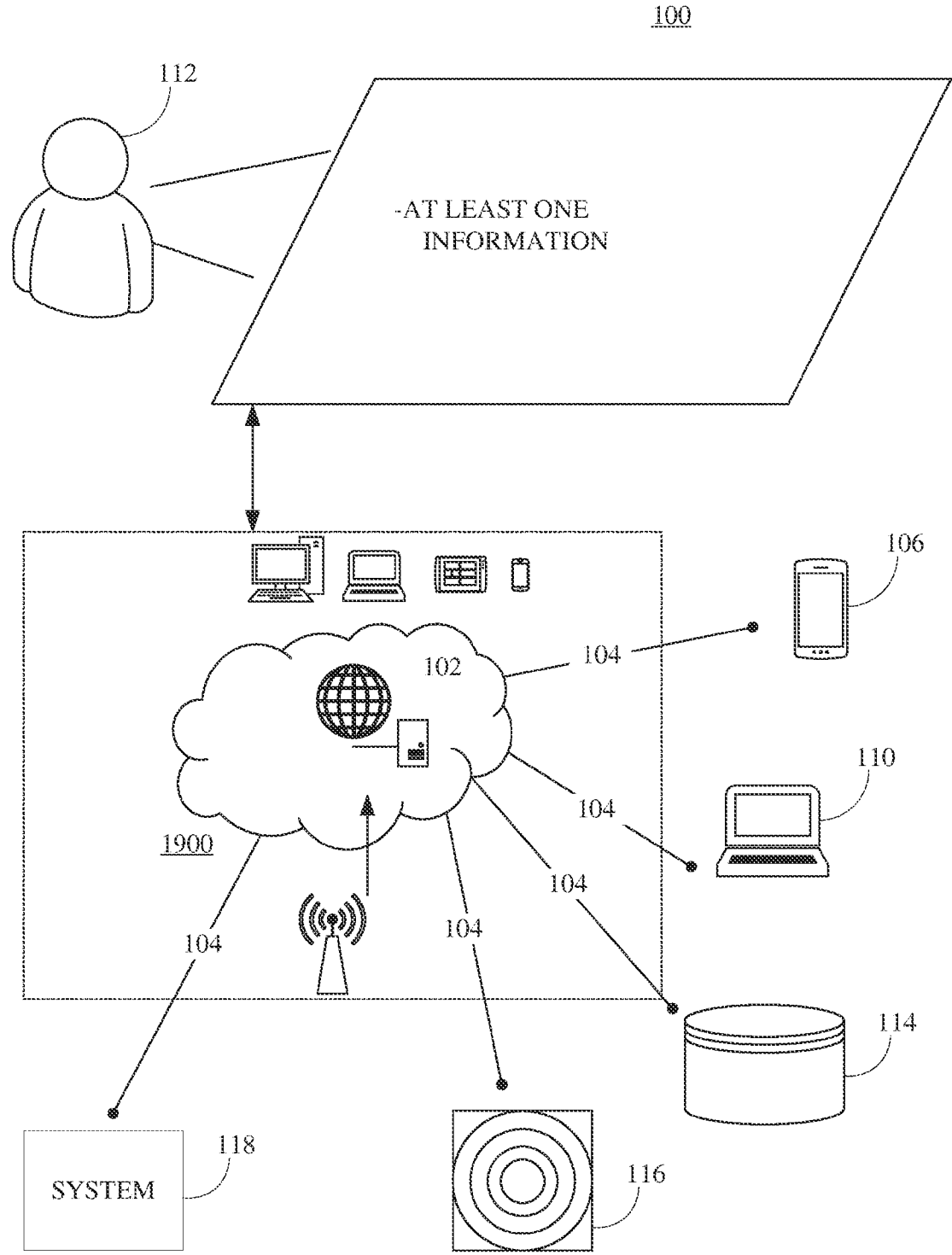


FIG. 1

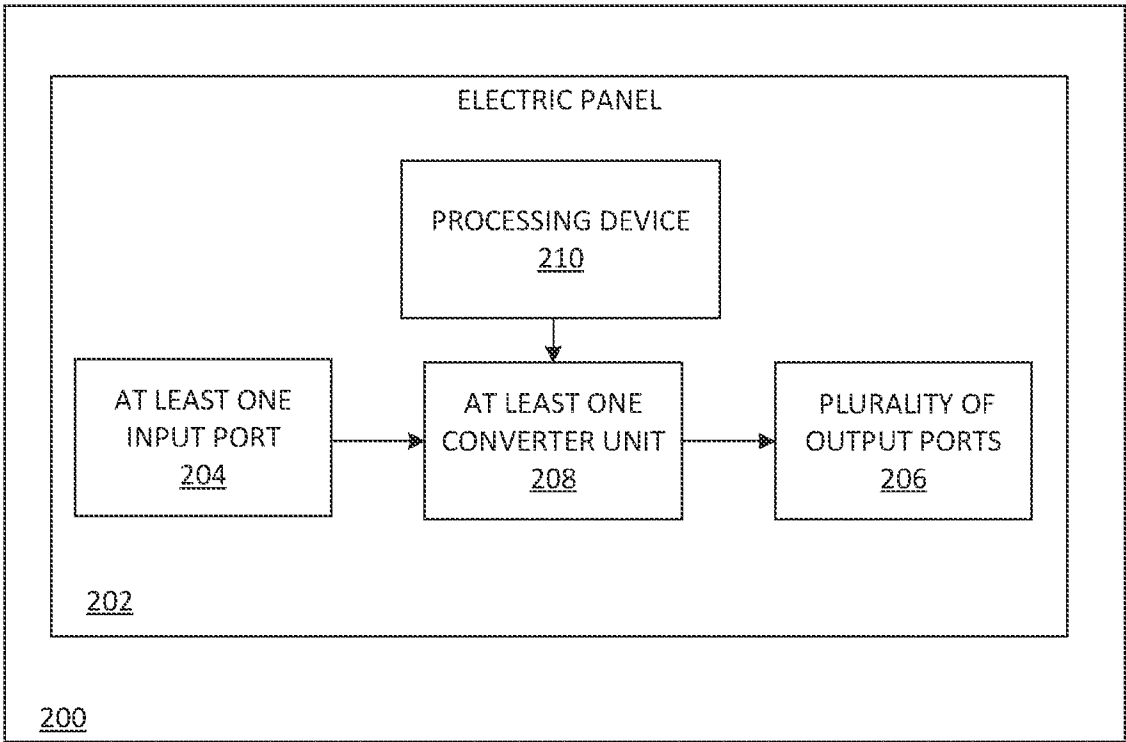


FIG. 2

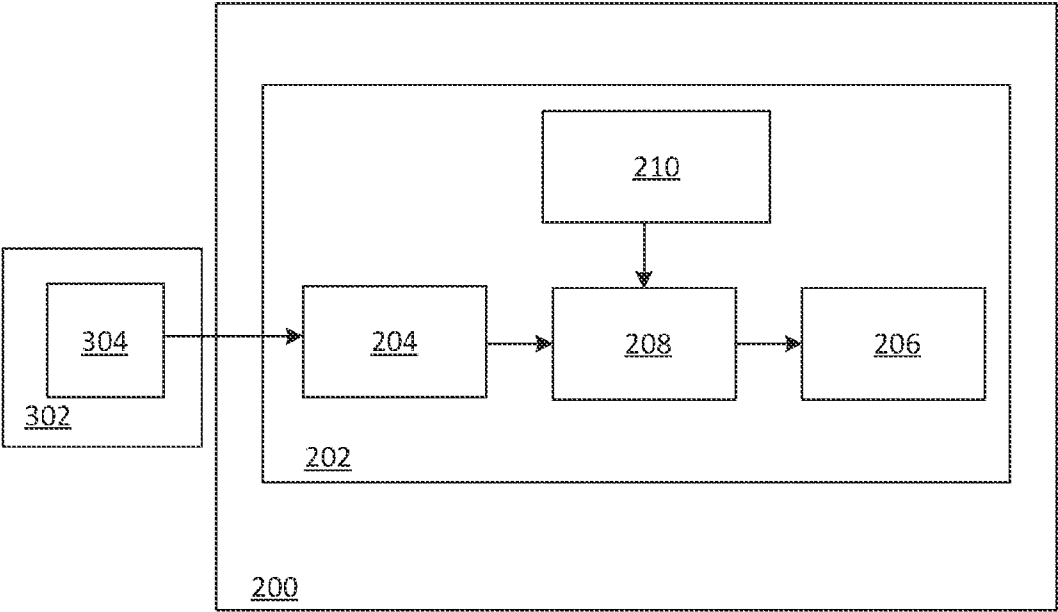


FIG. 3

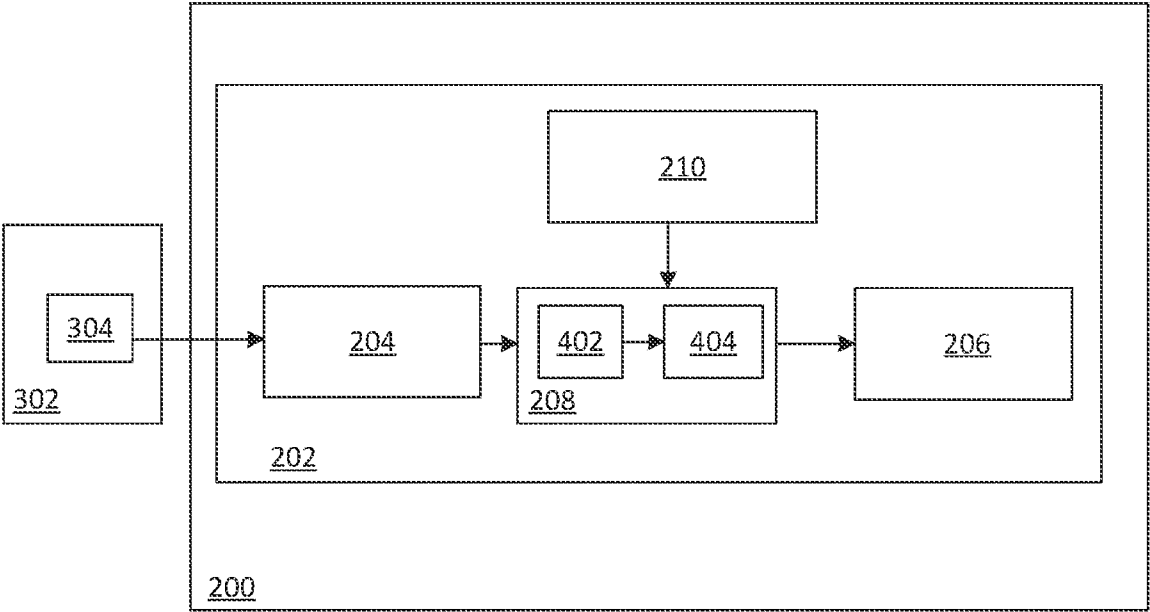


FIG. 4

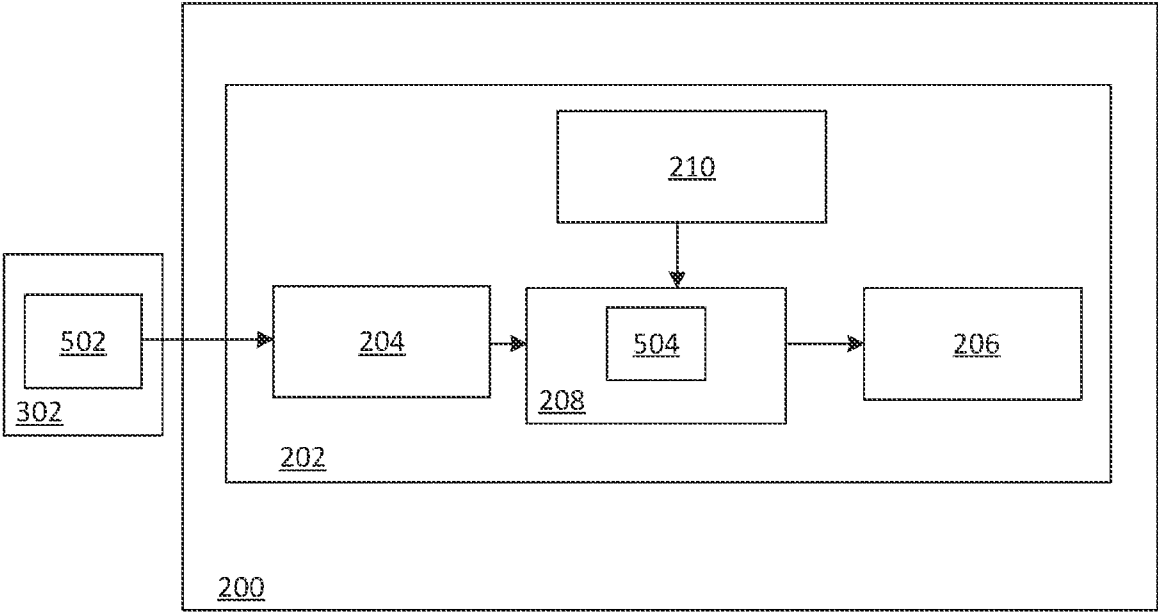


FIG. 5

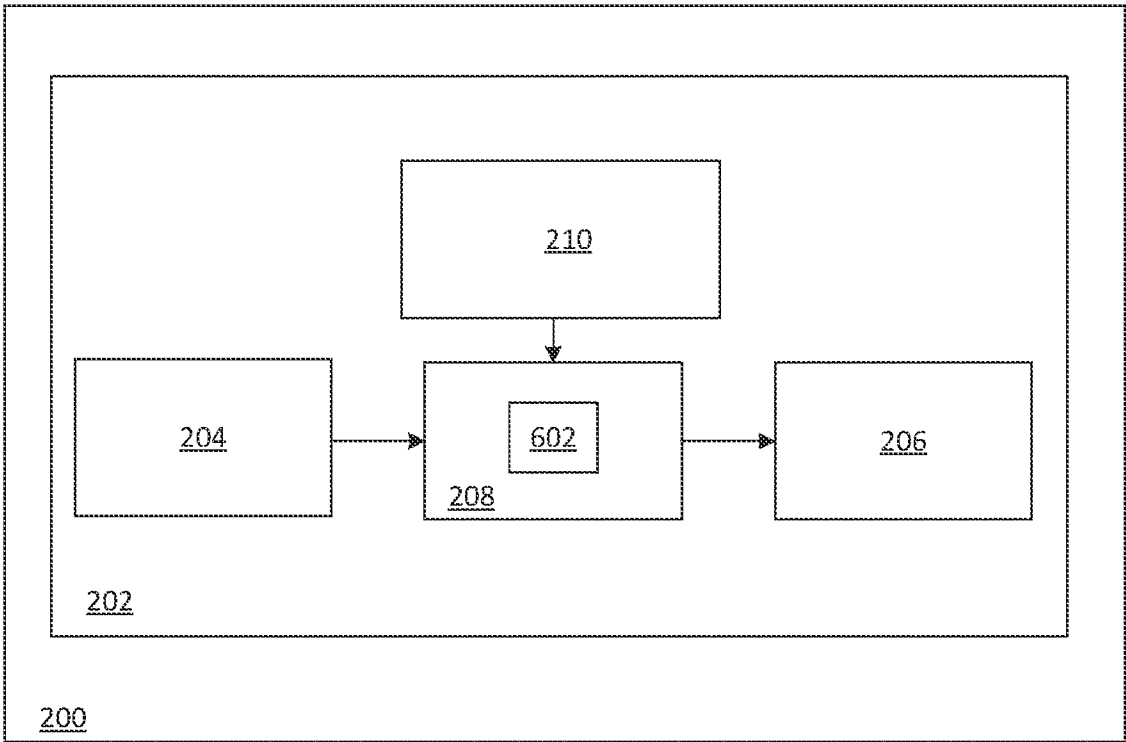


FIG. 6

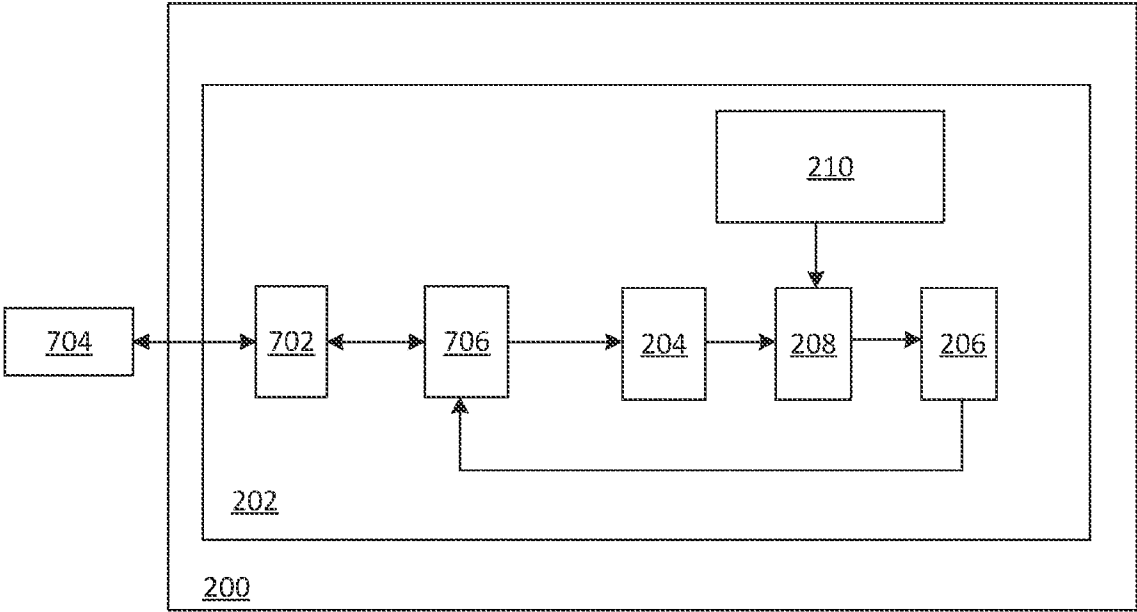


FIG. 7

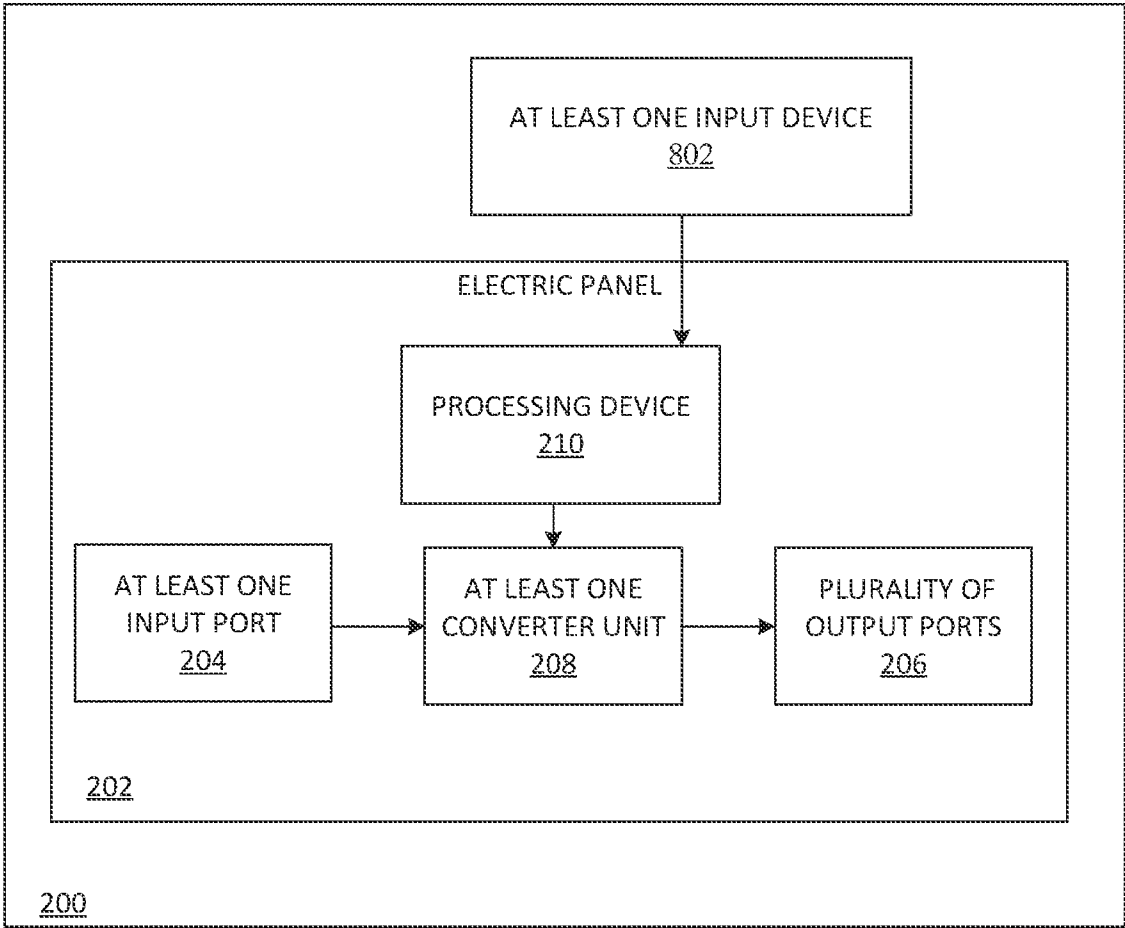


FIG. 8

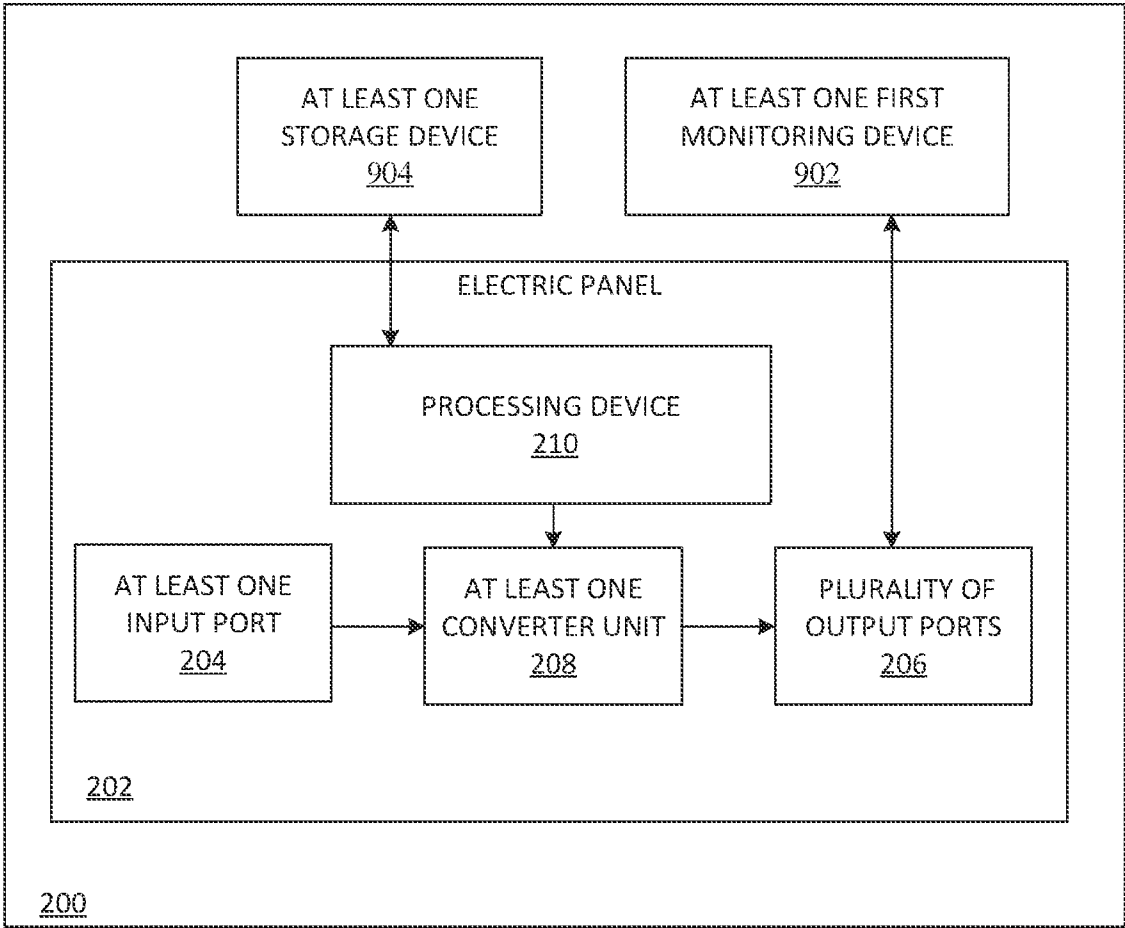


FIG. 9

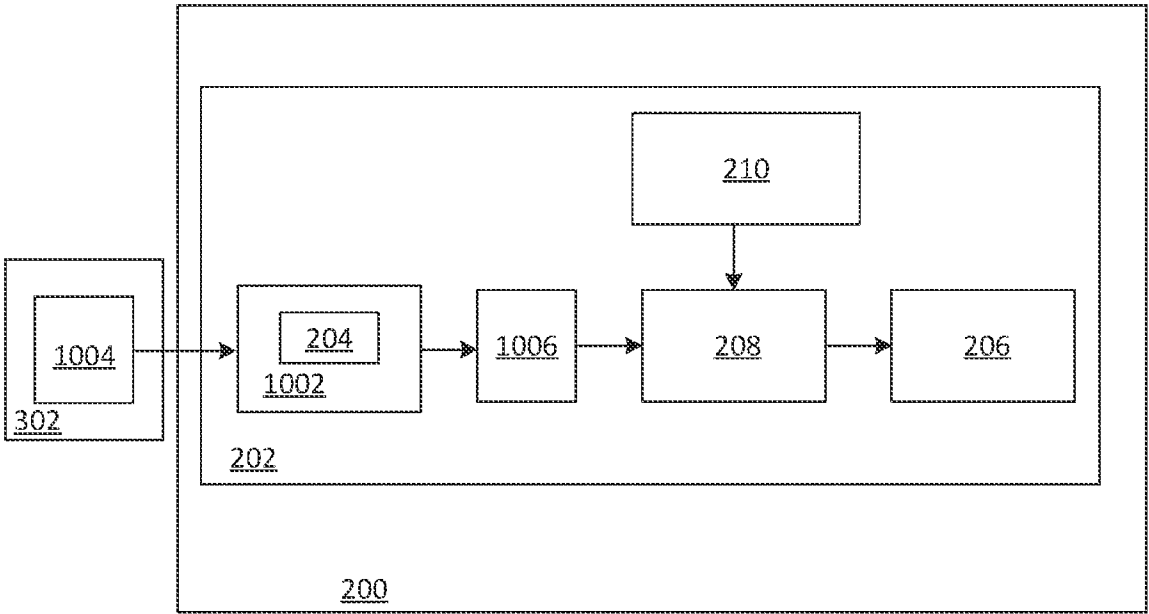


FIG. 10

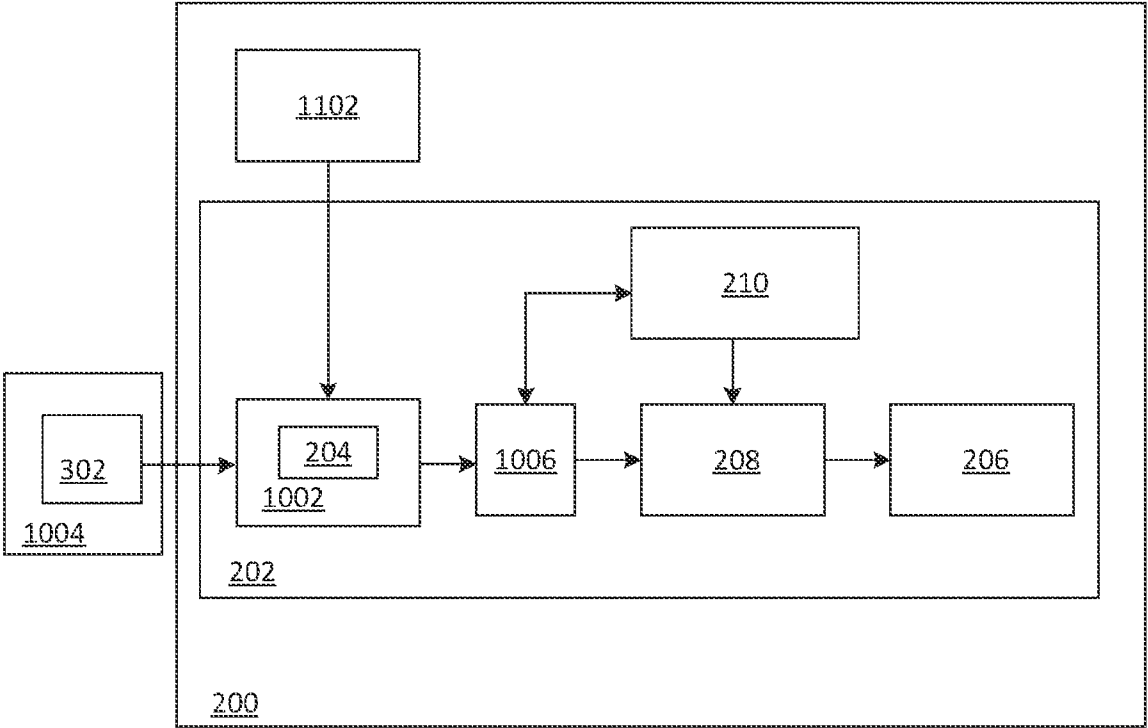


FIG. 11

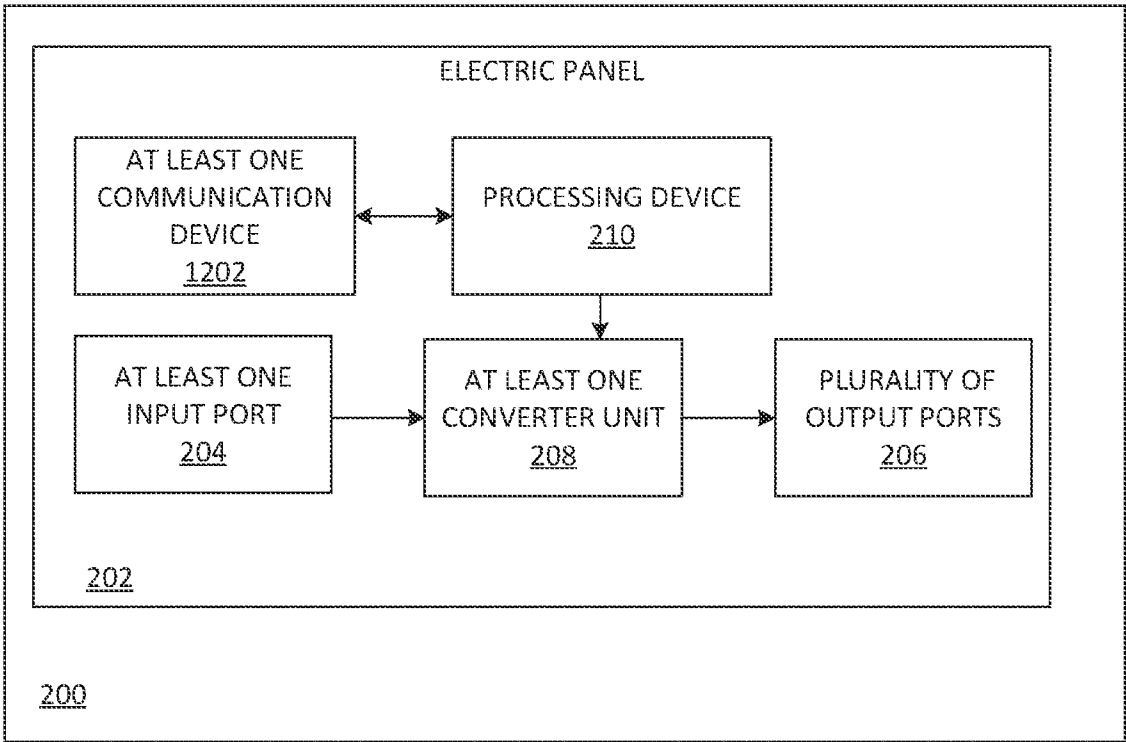


FIG. 12

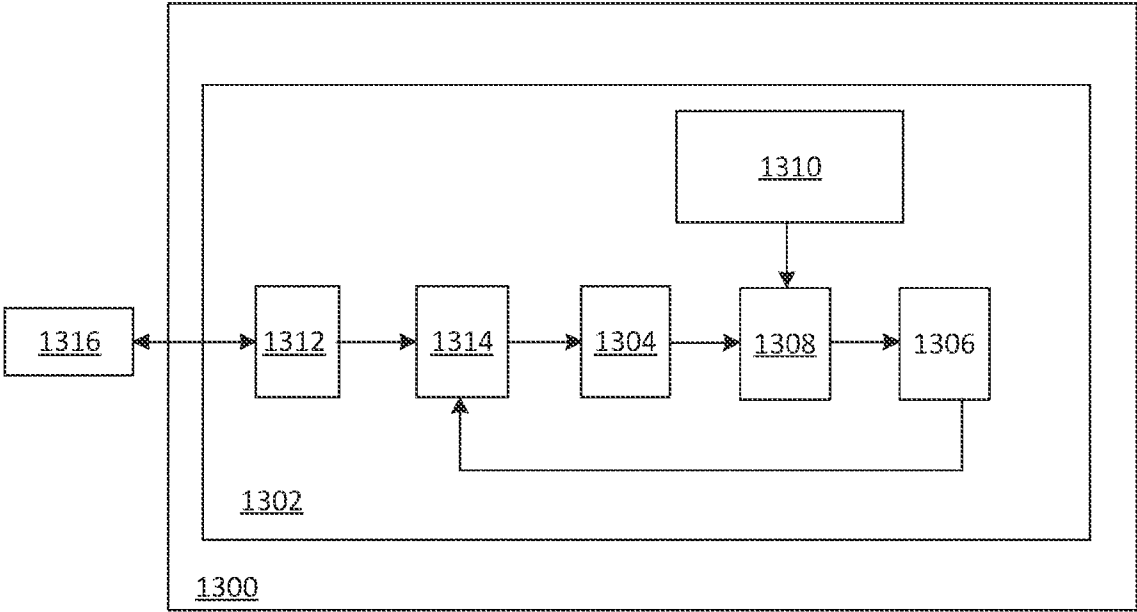


FIG. 13

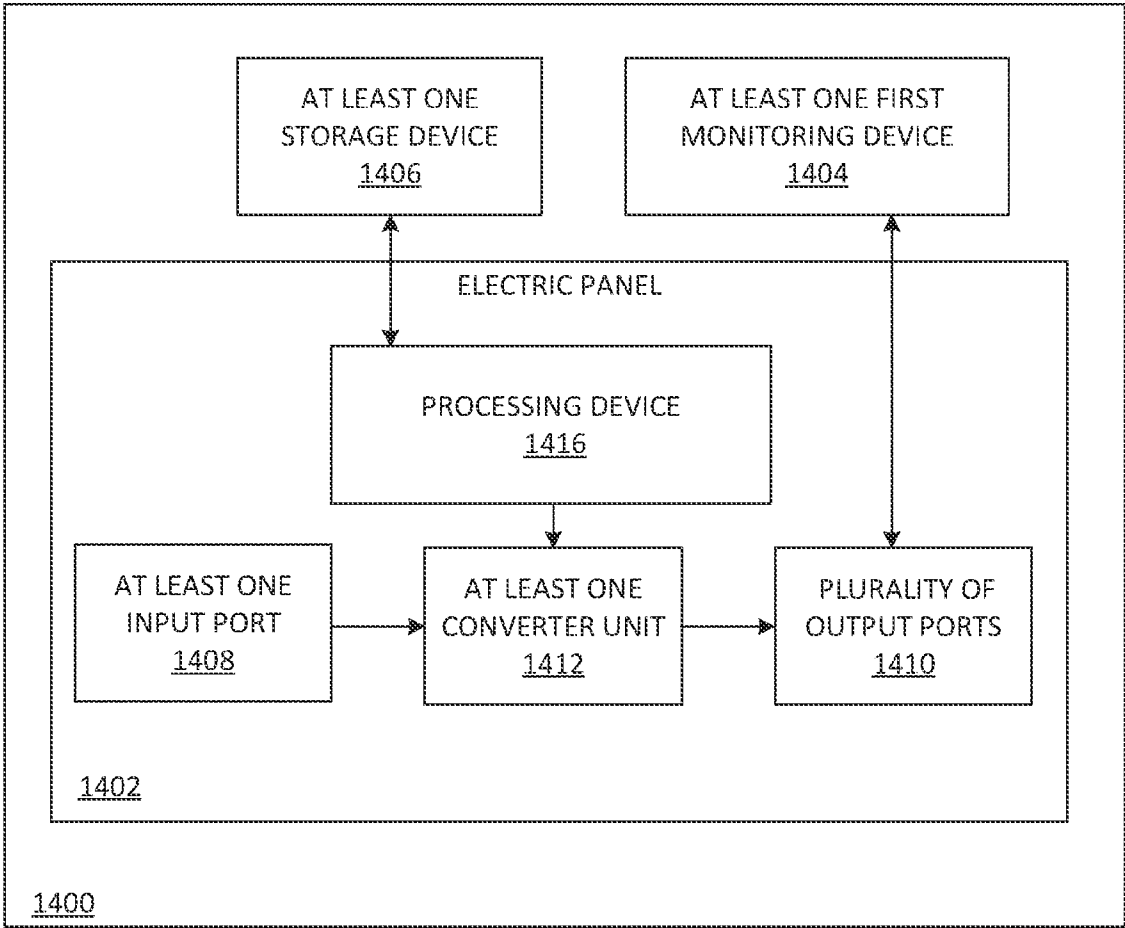


FIG. 14

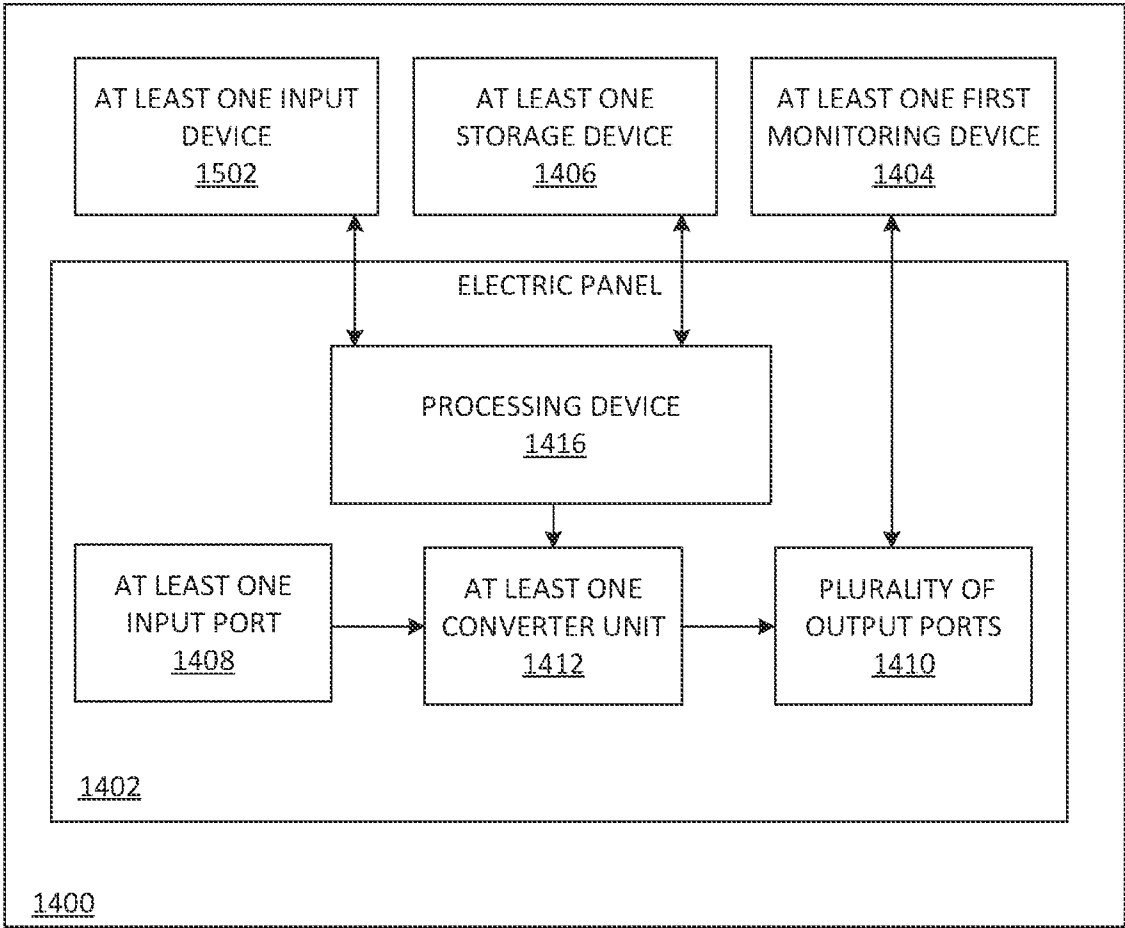


FIG. 15

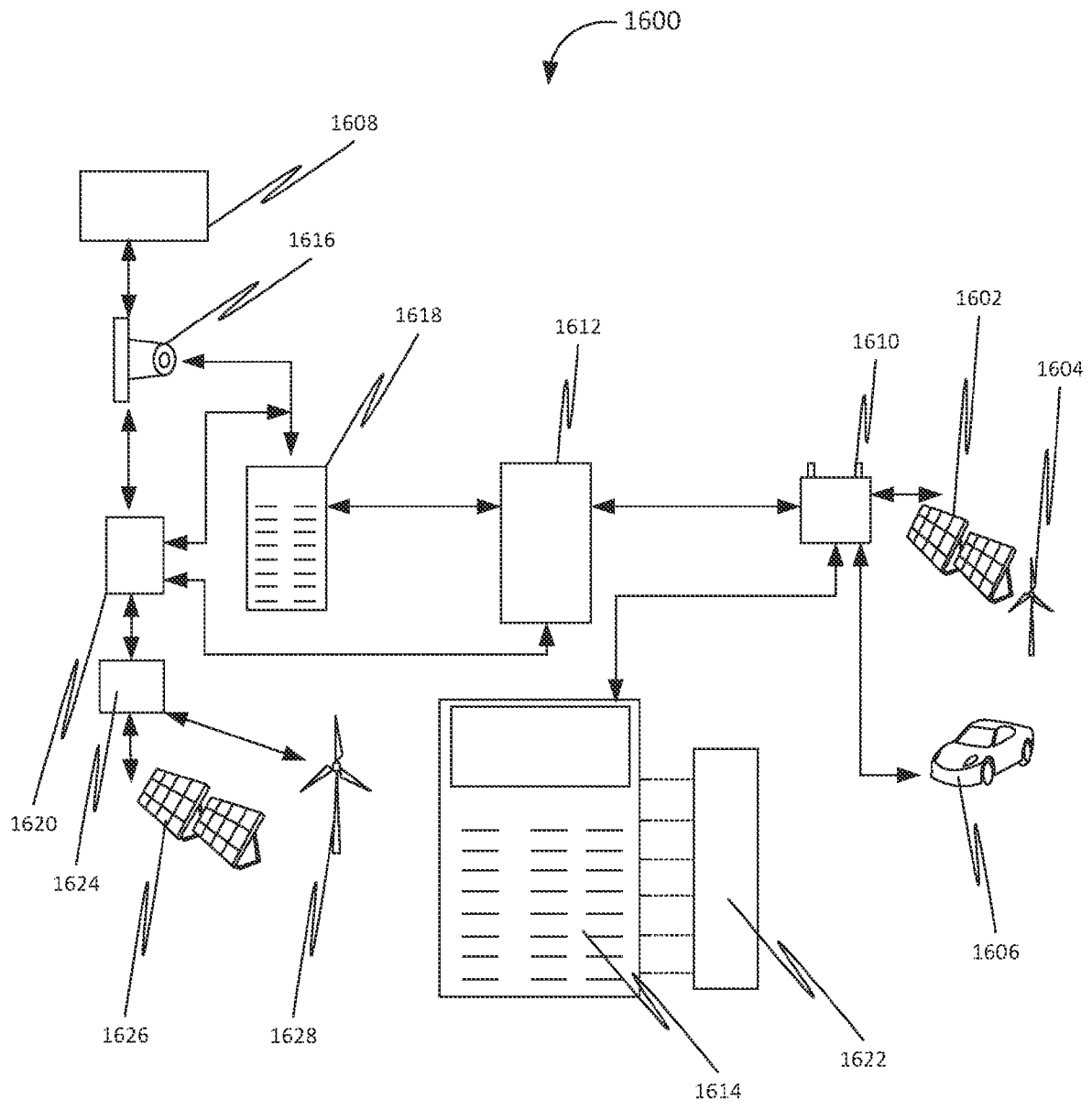


FIG. 16

17/19

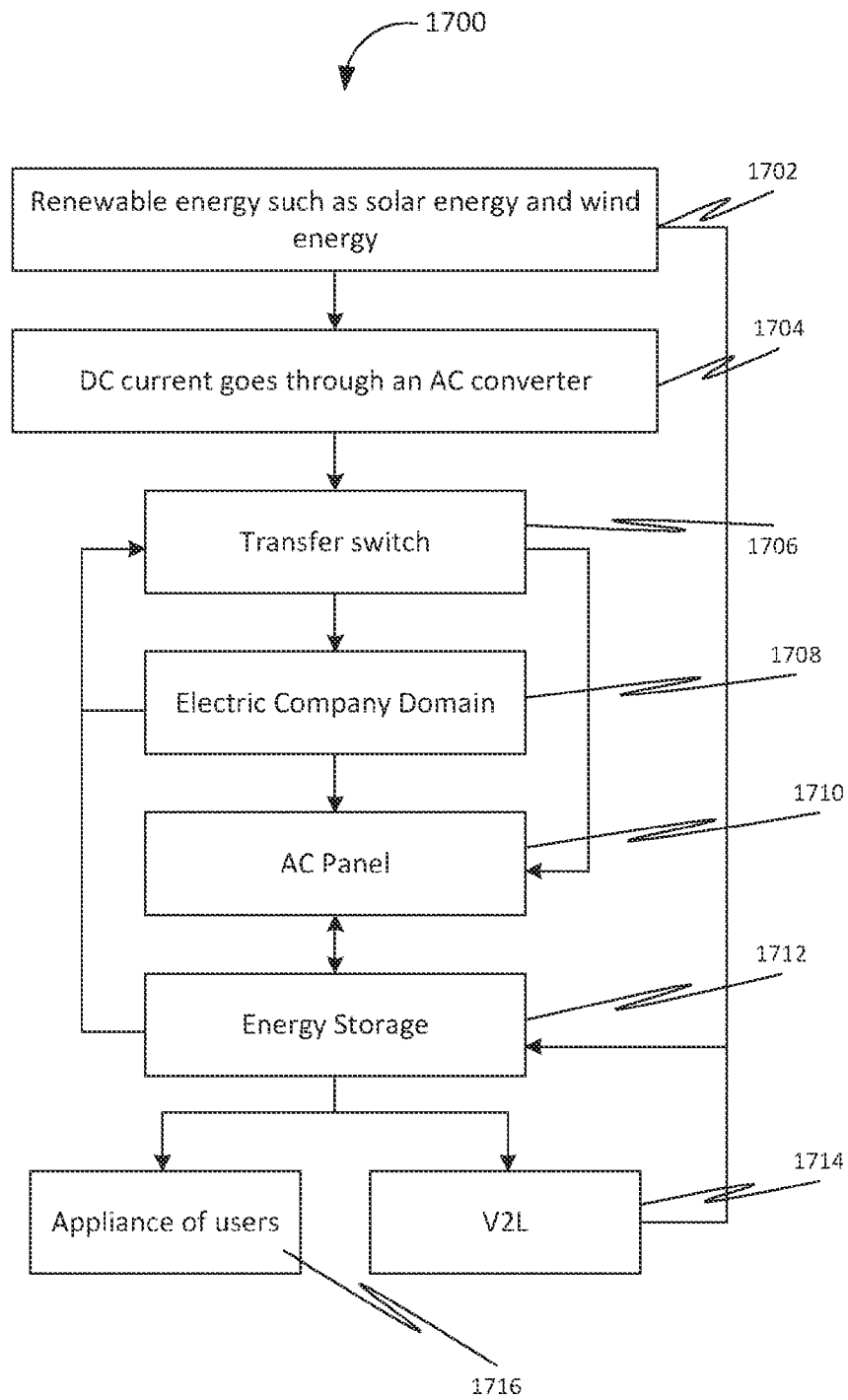


FIG. 17

18/19

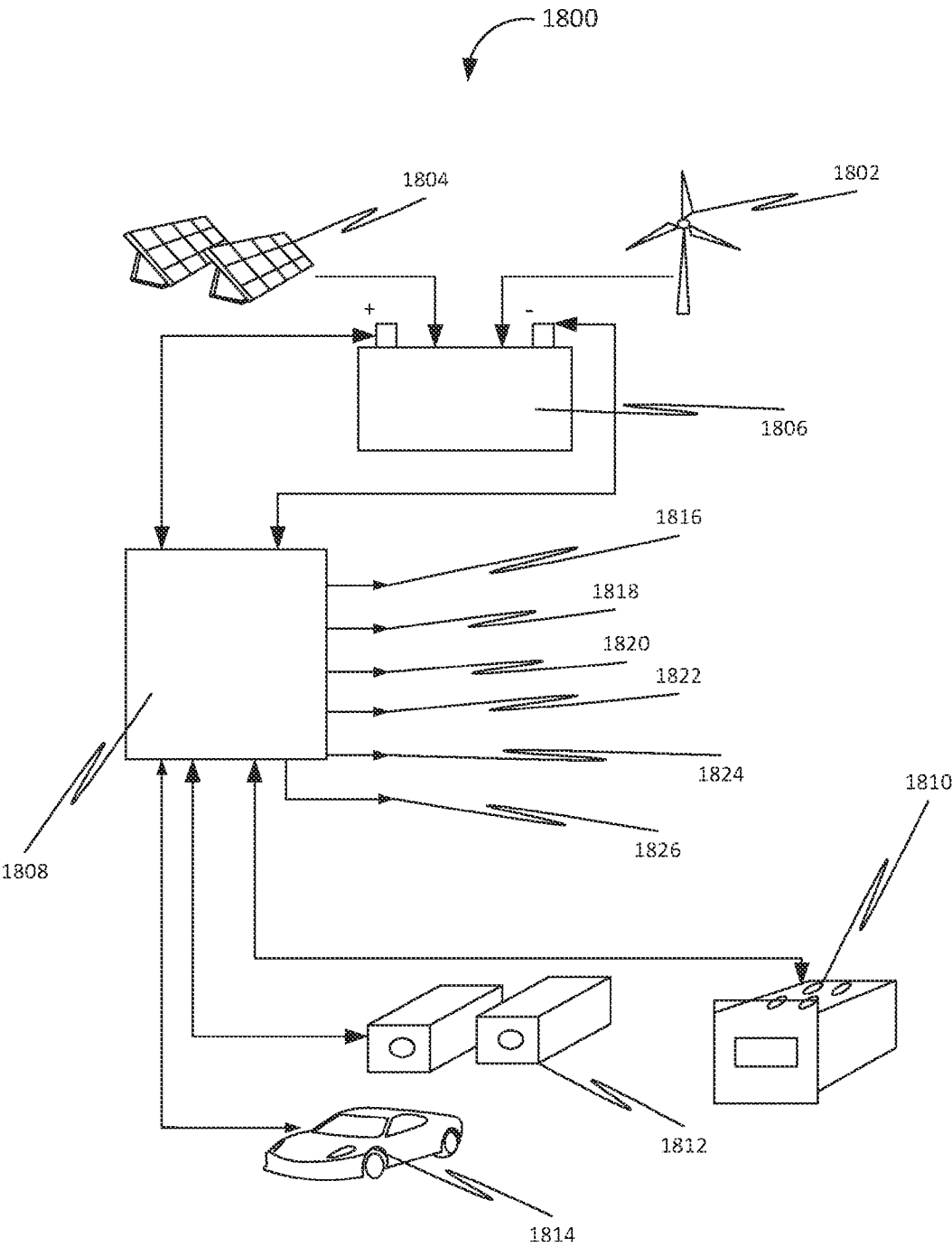


FIG. 18

19/19

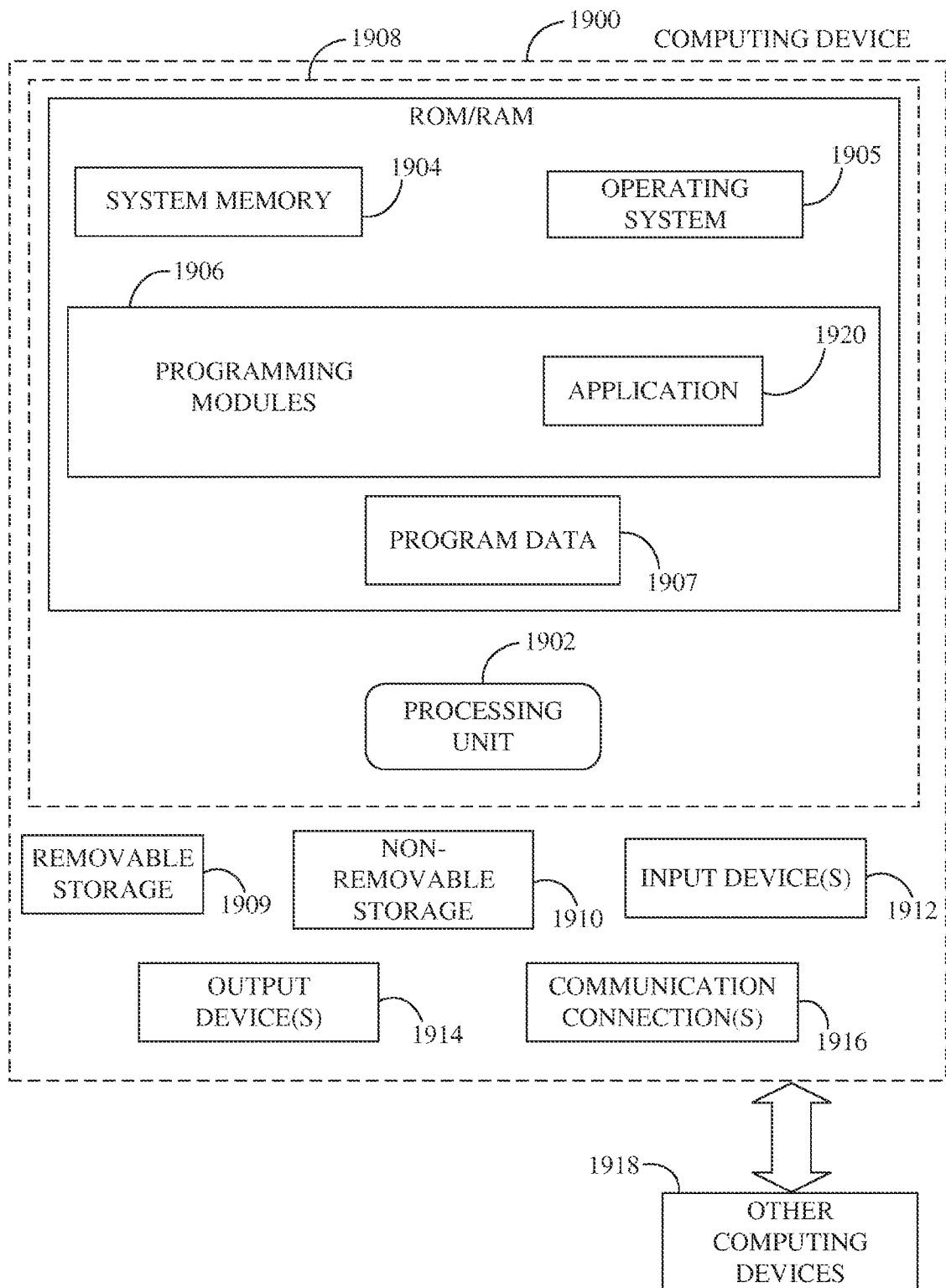


FIG. 19