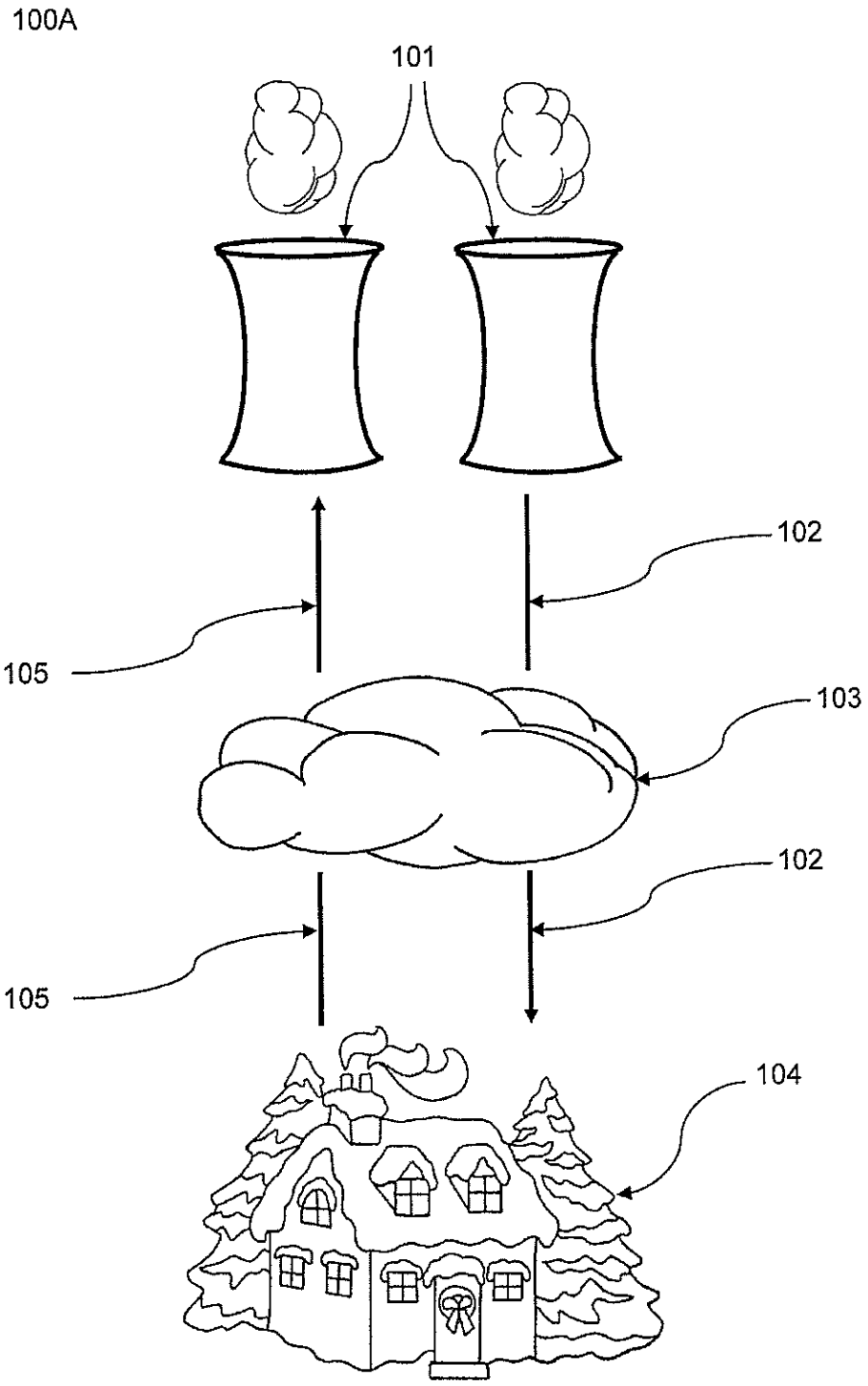


FIG. 1A

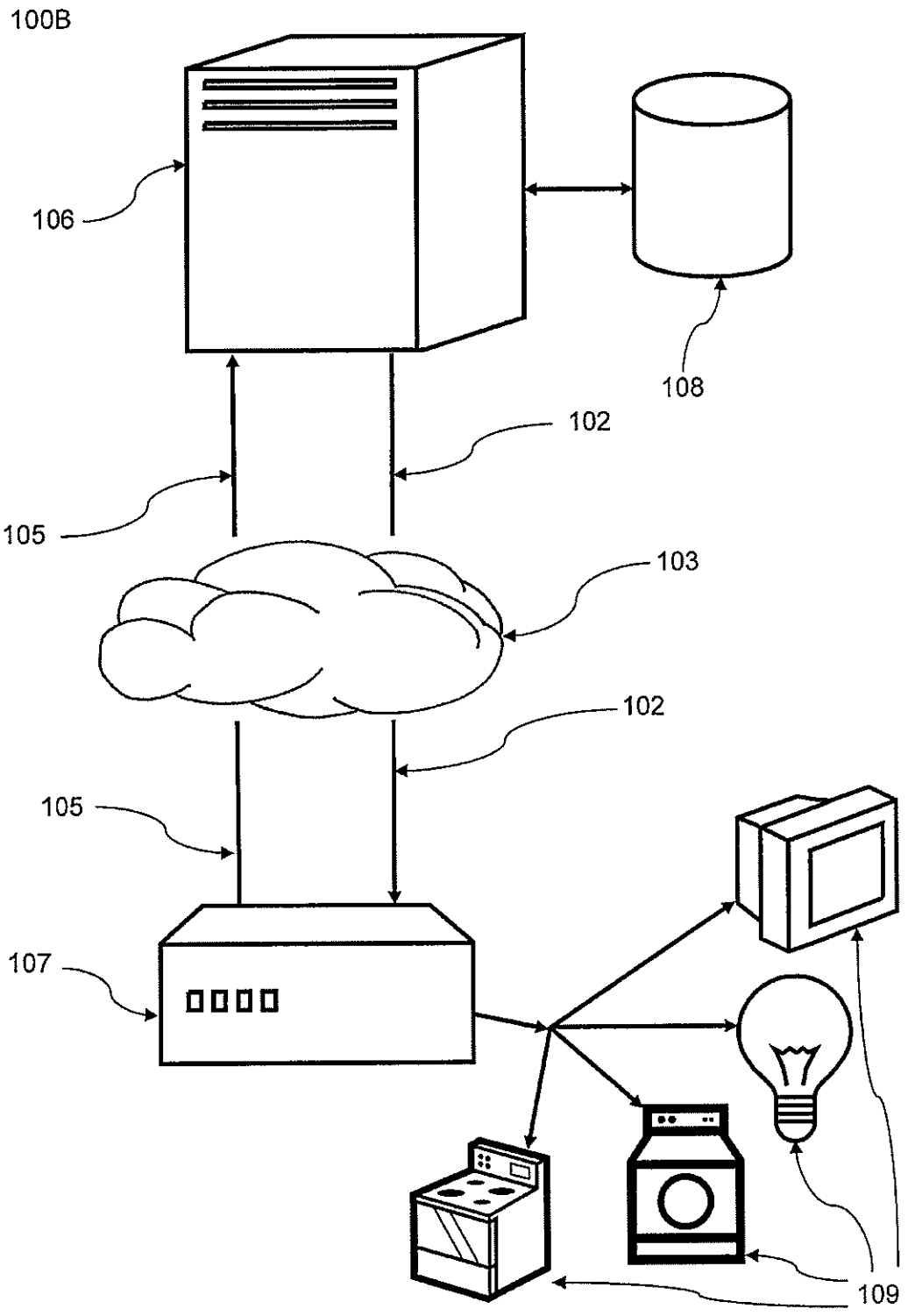


FIG. 1B

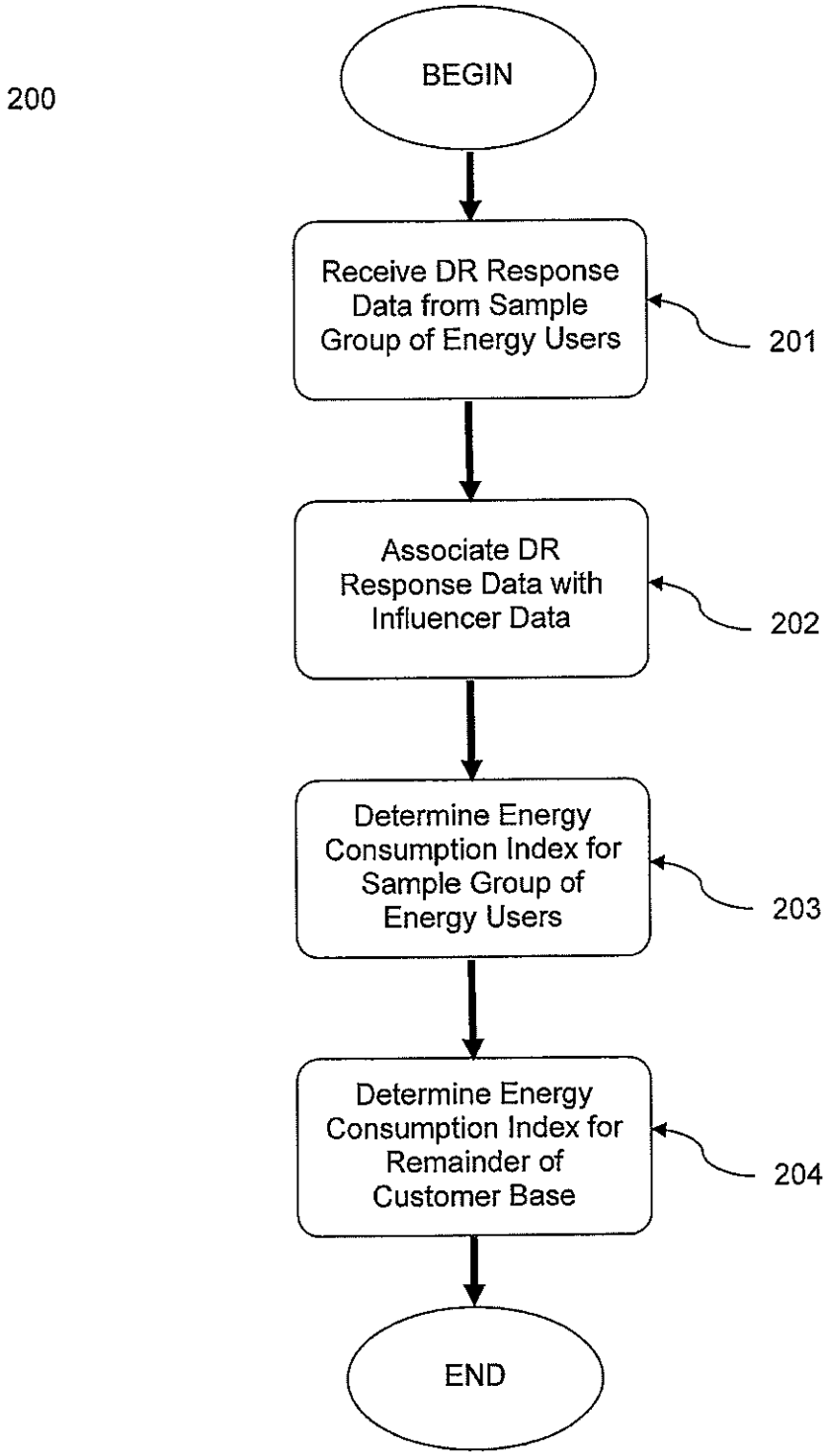
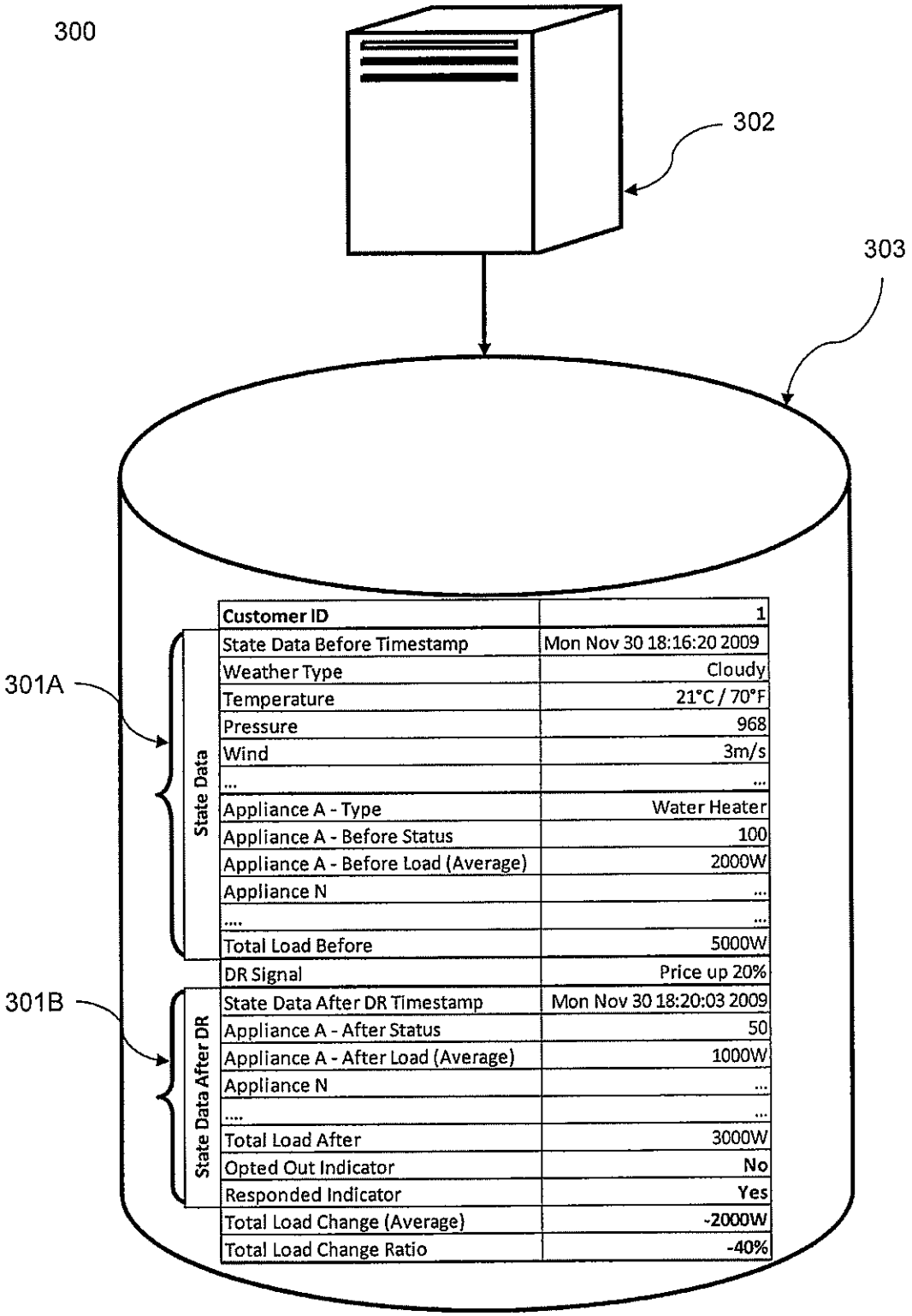

200
BEGIN
Receive DR Response Data from Sample Group of Energy Users
201
Associate DR Response Data with Influencer Data
202
Determine Energy Consumption Index for Sample Group of Energy Users
203
Determine Energy Consumption Index for Remainder of Customer Base
204
END

FIG. 2



	Customer ID	**1**
State Data	State Data Before Timestamp	Mon Nov 30 18:16:20 2009
	Weather Type	Cloudy
	Temperature	21°C / 70°F
	Pressure	968
	Wind	3m/s
	...	...
	Appliance A - Type	Water Heater
	Appliance A - Before Status	100
	Appliance A - Before Load (Average)	2000W
	Appliance N	...
	....	...
	Total Load Before	5000W
	DR Signal	Price up 20%
State Data After DR	State Data After DR Timestamp	Mon Nov 30 18:20:03 2009
	Appliance A - After Status	50
	Appliance A - After Load (Average)	1000W
	Appliance N	...
	....	...
	Total Load After	3000W
	Opted Out Indicator	No
	Responded Indicator	Yes
	Total Load Change (Average)	-2000W
	Total Load Change Ratio	-40%

FIG. 3

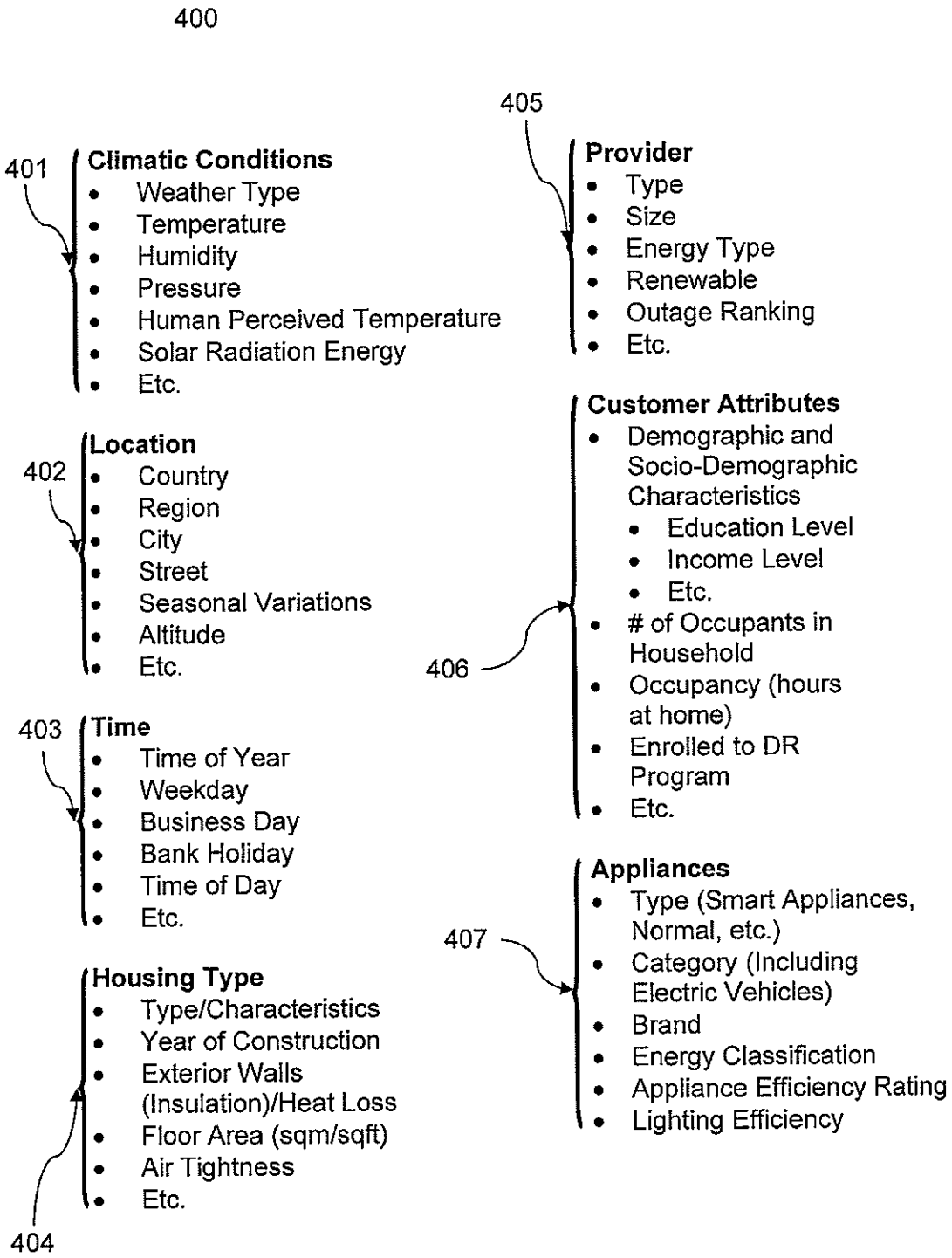

400
401
Climatic Conditions
Weather Type
Temperature
Humidity
Pressure
Human Perceived Temperature
Solar Radiation Energy
Etc.
402
Location
Country
Region
City
Street
Seasonal Variations
Altitude
Etc.
403
Time
Time of Year
Weekday
Business Day
Bank Holiday
Time of Day
Etc.
404
Housing Type
Type/Characteristics
Year of Construction
Exterior Walls (Insulation)/Heat Loss
Floor Area (sqm/sqft)
Air Tightness
Etc.
405
Provider
Type
Size
Energy Type
Renewable
Outage Ranking
Etc.
406
Customer Attributes
Demographic and Socio-Demographic Characteristics
Education Level
Income Level
Etc.
# of Occupants in Household
Occupancy (hours at home)
Enrolled to DR Program
Etc.
407
Appliances
Type (Smart Appliances, Normal, etc.)
Category (Including Electric Vehicles)
Brand
Energy Classification
Appliance Efficiency Rating
Lighting Efficiency

FIG. 4

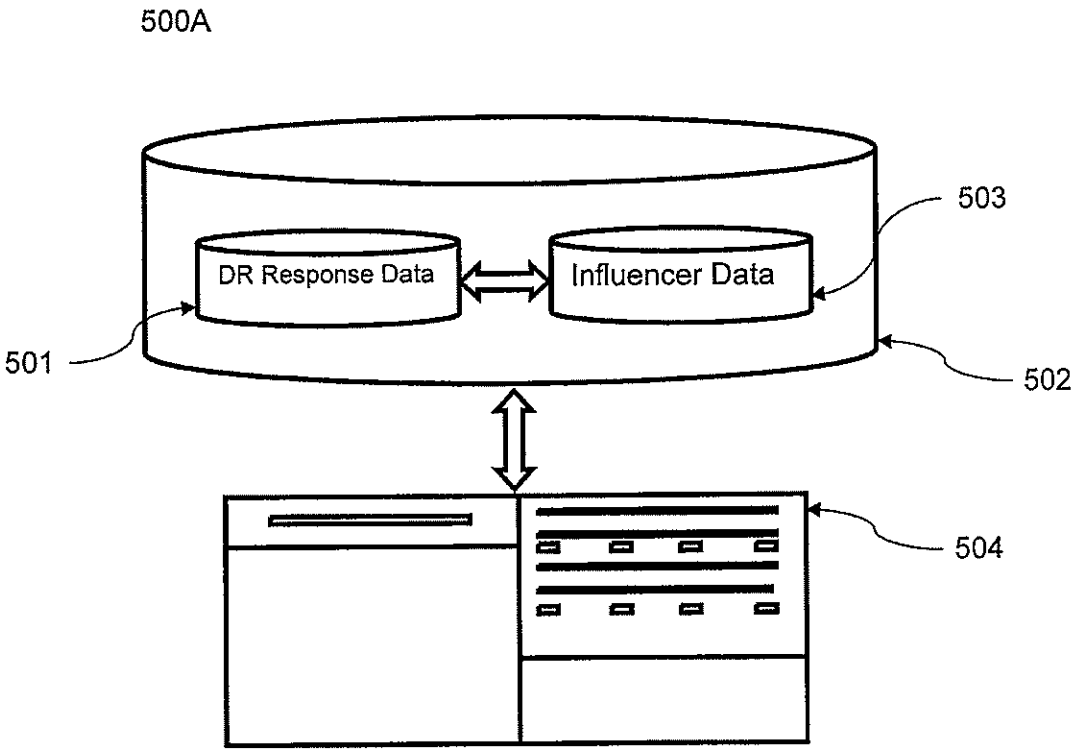


FIG. 5A

500B

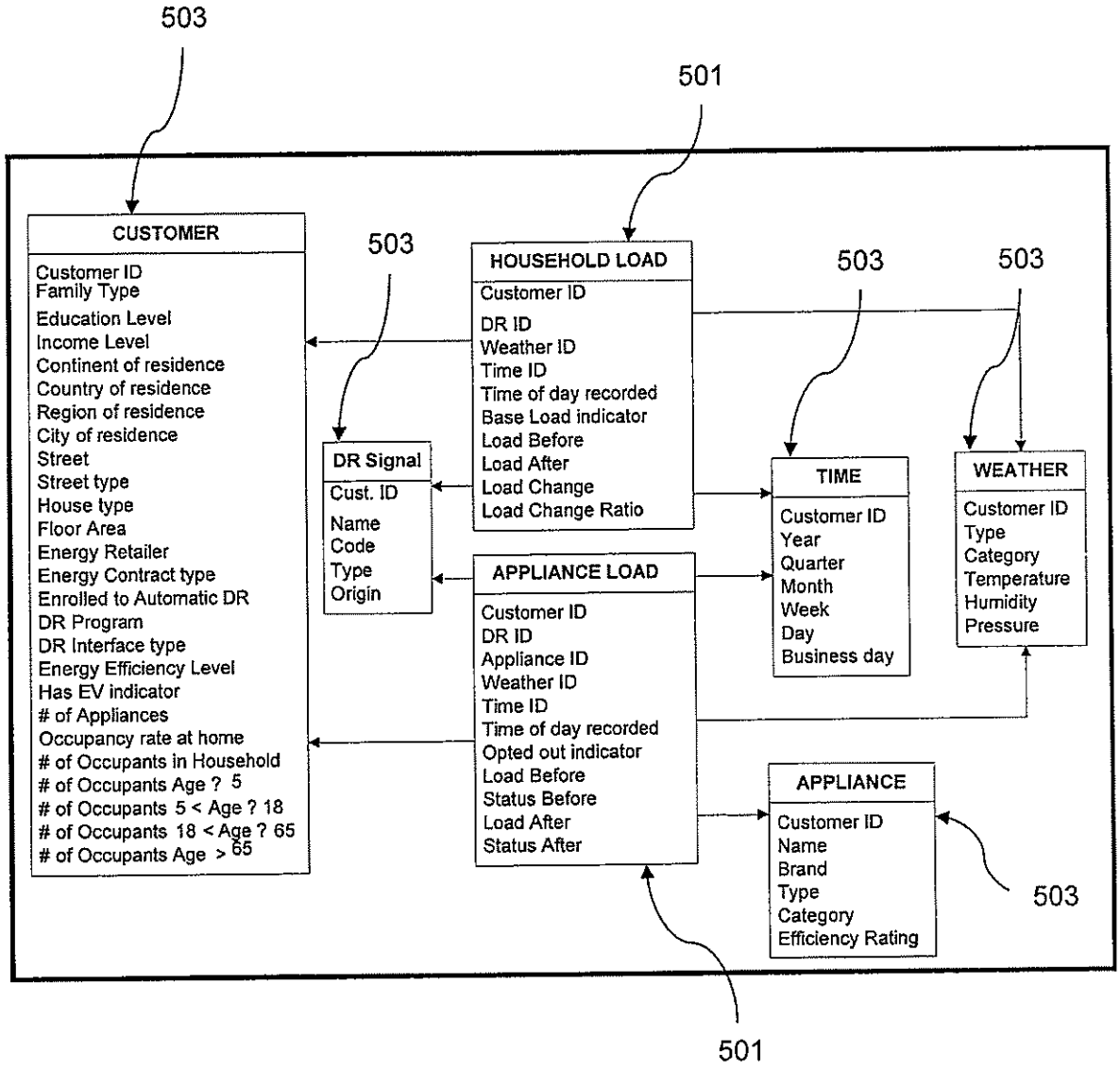

503
501
503
503
503
503
CUSTOMER
Customer ID
Family Type
Education Level
Income Level
Continent of residence
Country of residence
Region of residence
City of residence
Street
Street type
House type
Floor Area
Energy Retailer
Energy Contract type
Enrolled to Automatic DR
DR Program
DR Interface type
Energy Efficiency Level
Has EV indicator
# of Appliances
Occupancy rate at home
# of Occupants in Household
# of Occupants Age ? 5
# of Occupants 5 < Age ? 18
# of Occupants 18 < Age ? 65
# of Occupants Age > 65
DR Signal
Cust. ID
Name
Code
Type
Origin
HOUSEHOLD LOAD
Customer ID
DR ID
Weather ID
Time ID
Time of day recorded
Base Load indicator
Load Before
Load After
Load Change
Load Change Ratio
APPLIANCE LOAD
Customer ID
DR ID
Appliance ID
Weather ID
Time ID
Time of day recorded
Opted out indicator
Load Before
Status Before
Load After
Status After
TIME
Customer ID
Year
Quarter
Month
Week
Day
Business day
WEATHER
Customer ID
Type
Category
Temperature
Humidity
Pressure
APPLIANCE
Customer ID
Name
Brand
Type
Category
Efficiency Rating
503
501

FIG. 5B

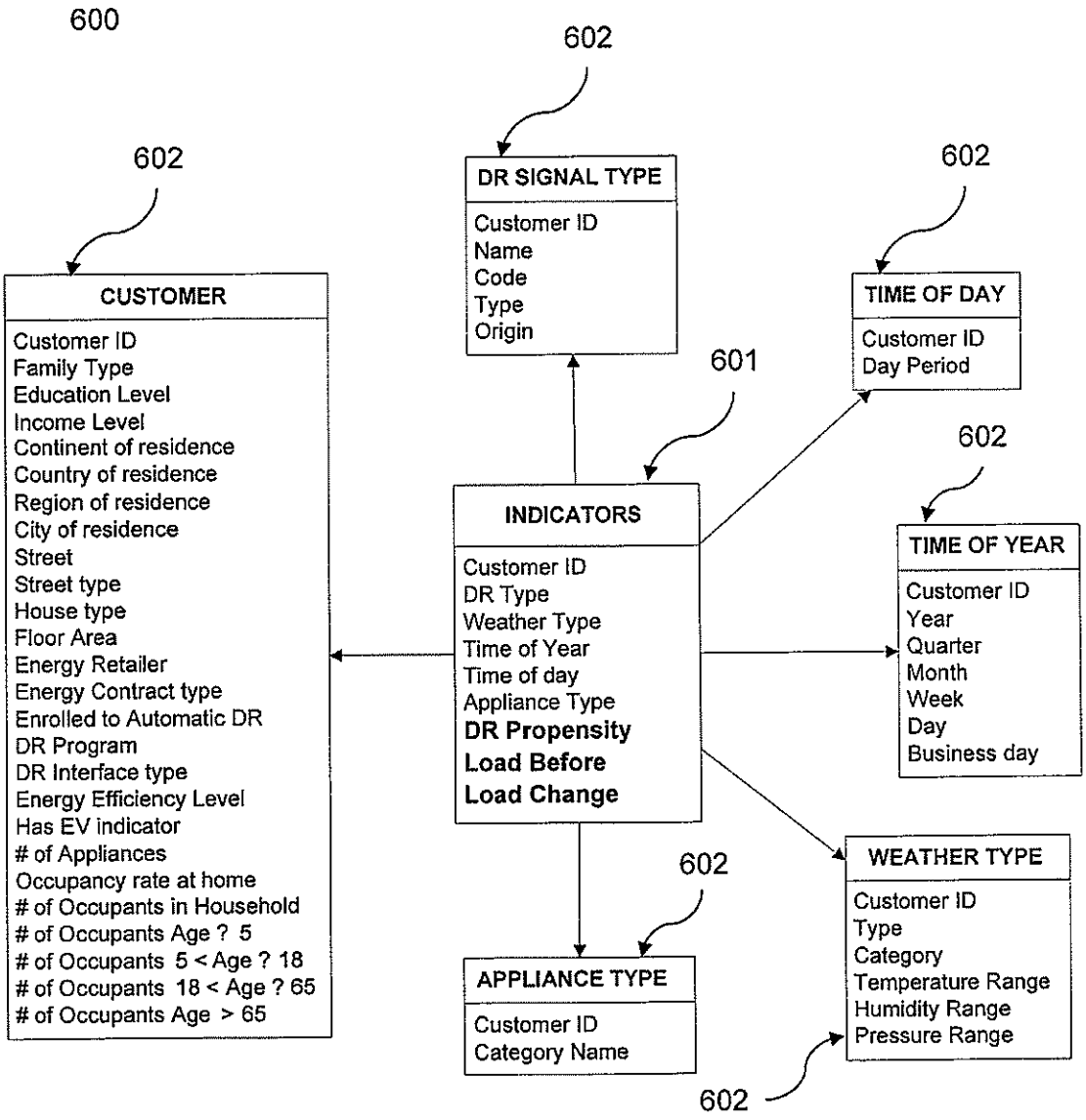

600
602
602
602
602
602
602
601
CUSTOMER
Customer ID
Family Type
Education Level
Income Level
Continent of residence
Country of residence
Region of residence
City of residence
Street
Street type
House type
Floor Area
Energy Retailer
Energy Contract type
Enrolled to Automatic DR
DR Program
DR Interface type
Energy Efficiency Level
Has EV indicator
# of Appliances
Occupancy rate at home
# of Occupants in Household
# of Occupants Age ? 5
# of Occupants 5 < Age ? 18
# of Occupants 18 < Age ? 65
# of Occupants Age > 65
DR SIGNAL TYPE
Customer ID
Name
Code
Type
Origin
TIME OF DAY
Customer ID
Day Period
INDICATORS
Customer ID
DR Type
Weather Type
Time of Year
Time of day
Appliance Type
DR Propensity
Load Before
Load Change
TIME OF YEAR
Customer ID
Year
Quarter
Month
Week
Day
Business day
WEATHER TYPE
Customer ID
Type
Category
Temperature Range
Humidity Range
Pressure Range
APPLIANCE TYPE
Customer ID
Category Name

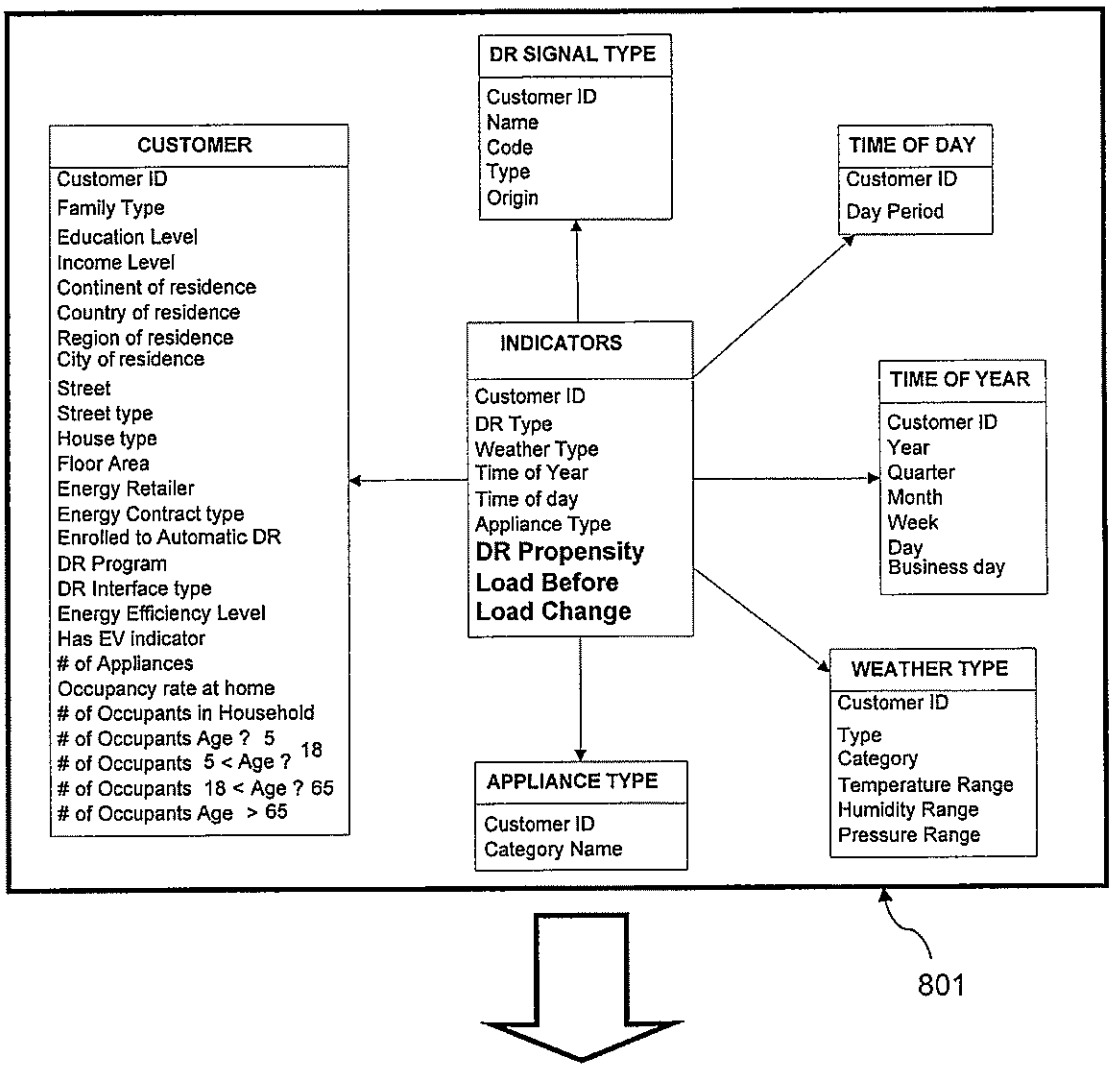
FIG. 6

700

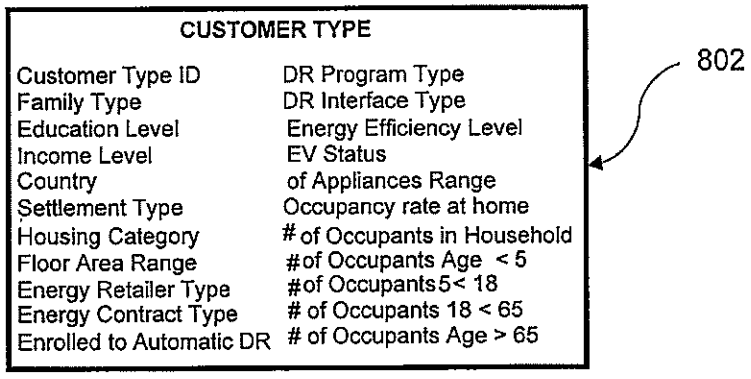
701 702 703 704

Customer Type	DR Type	Weather Type	Time of Year	Time of Day	Constructed	Propensity	Load Before	Load Change
1	Price Up 10-14%	1-3	November - Week 49	18:00 - 19:00	No	30%	4.5kW	-0.23
1	Price Up 15-19%	1-3	November - Week 49	18:00 - 19:00		?	?	?
1	Price Up 20-25%	1-3	November - Week 49	18:00 - 19:00	No	75%	4.5kW	-0.27
...	...	...	...	...	...	...	...	...
2	Price Up 10-14%	4-6	November - Week 49	19:00 - 20:00	No	10%	3kW	-0.15
...	...	...	...	...		...	...	...

FIG. 7


DR SIGNAL TYPE
Customer ID
Name
Code
Type
Origin
CUSTOMER
Customer ID
Family Type
Education Level
Income Level
Continent of residence
Country of residence
Region of residence
City of residence
Street
Street type
House type
Floor Area
Energy Retailer
Energy Contract type
Enrolled to Automatic DR
DR Program
DR Interface type
Energy Efficiency Level
Has EV indicator
# of Appliances
Occupancy rate at home
# of Occupants in Household
# of Occupants Age ? 5
# of Occupants 5 < Age ? 18
# of Occupants 18 < Age ? 65
# of Occupants Age > 65
TIME OF DAY
Customer ID
Day Period
INDICATORS
Customer ID
DR Type
Weather Type
Time of Year
Time of day
Appliance Type
DR Propensity
Load Before
Load Change
TIME OF YEAR
Customer ID
Year
Quarter
Month
Week
Day
Business day
WEATHER TYPE
Customer ID
Type
Category
Temperature Range
Humidity Range
Pressure Range
APPLIANCE TYPE
Customer ID
Category Name
801

800


CUSTOMER TYPE
Customer Type ID
Family Type
Education Level
Income Level
Country
Settlement Type
Housing Category
Floor Area Range
Energy Retailer Type
Energy Contract Type
Enrolled to Automatic DR
DR Program Type
DR Interface Type
Energy Efficiency Level
EV Status
of Appliances Range
Occupancy rate at home
# of Occupants in Household
#of Occupants Age < 5
#of Occupants5< 18
# of Occupants 18 < 65
# of Occupants Age > 65

802

FIG. 8

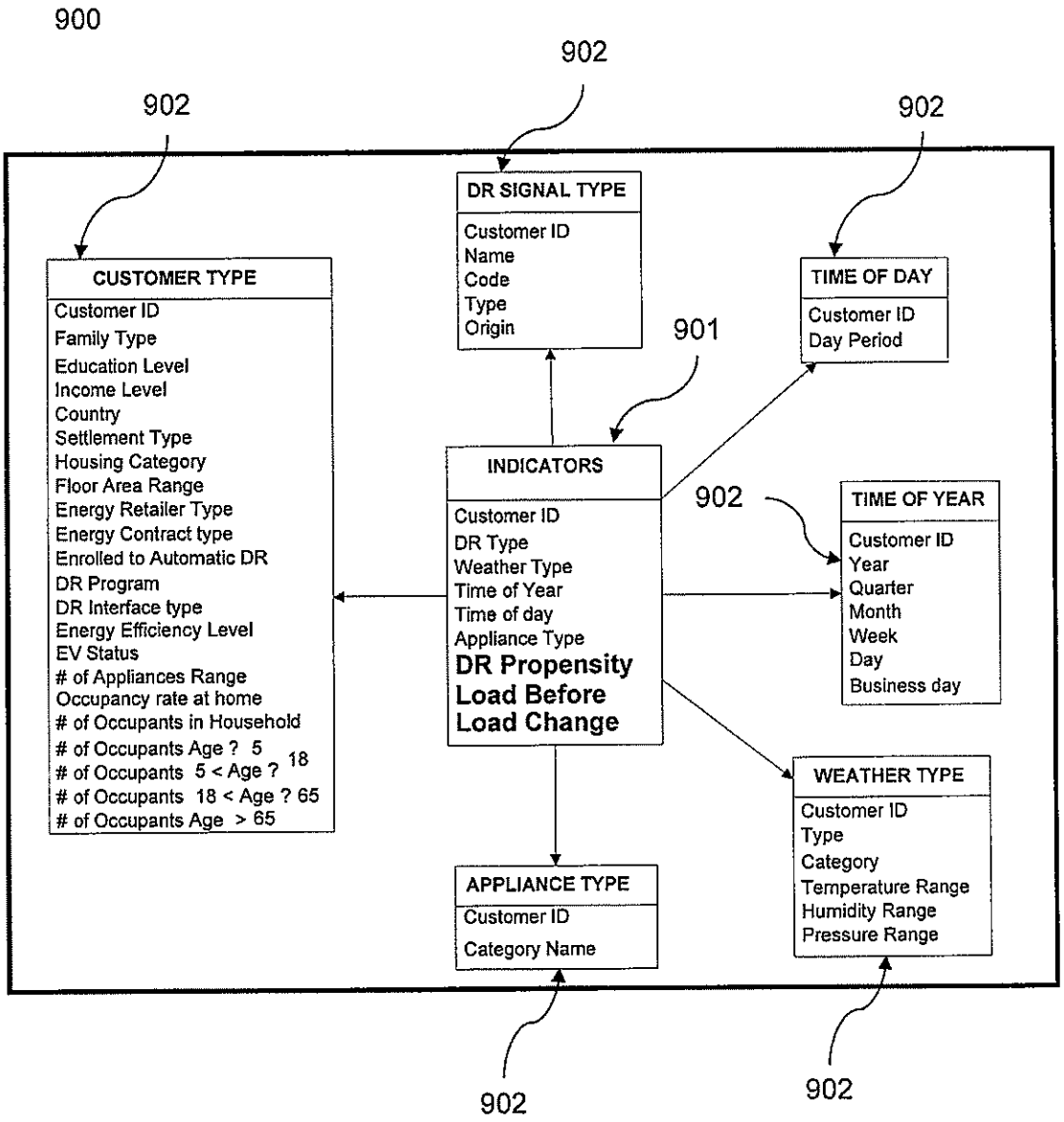

900
902
902
902
DR SIGNAL TYPE
Customer ID
Name
Code
Type
Origin
CUSTOMER TYPE
Customer ID
Family Type
Education Level
Income Level
Country
Settlement Type
Housing Category
Floor Area Range
Energy Retailer Type
Energy Contract type
Enrolled to Automatic DR
DR Program
DR Interface type
Energy Efficiency Level
EV Status
# of Appliances Range
Occupancy rate at home
# of Occupants in Household
# of Occupants Age ? 5
# of Occupants 5 < Age ? 18
# of Occupants 18 < Age ? 65
# of Occupants Age > 65
TIME OF DAY
Customer ID
Day Period
901
INDICATORS
Customer ID
DR Type
Weather Type
Time of Year
Time of day
Appliance Type
DR Propensity
Load Before
Load Change
902
TIME OF YEAR
Customer ID
Year
Quarter
Month
Week
Day
Business day
WEATHER TYPE
Customer ID
Type
Category
Temperature Range
Humidity Range
Pressure Range
APPLIANCE TYPE
Customer ID
Category Name
902
902

FIG. 9

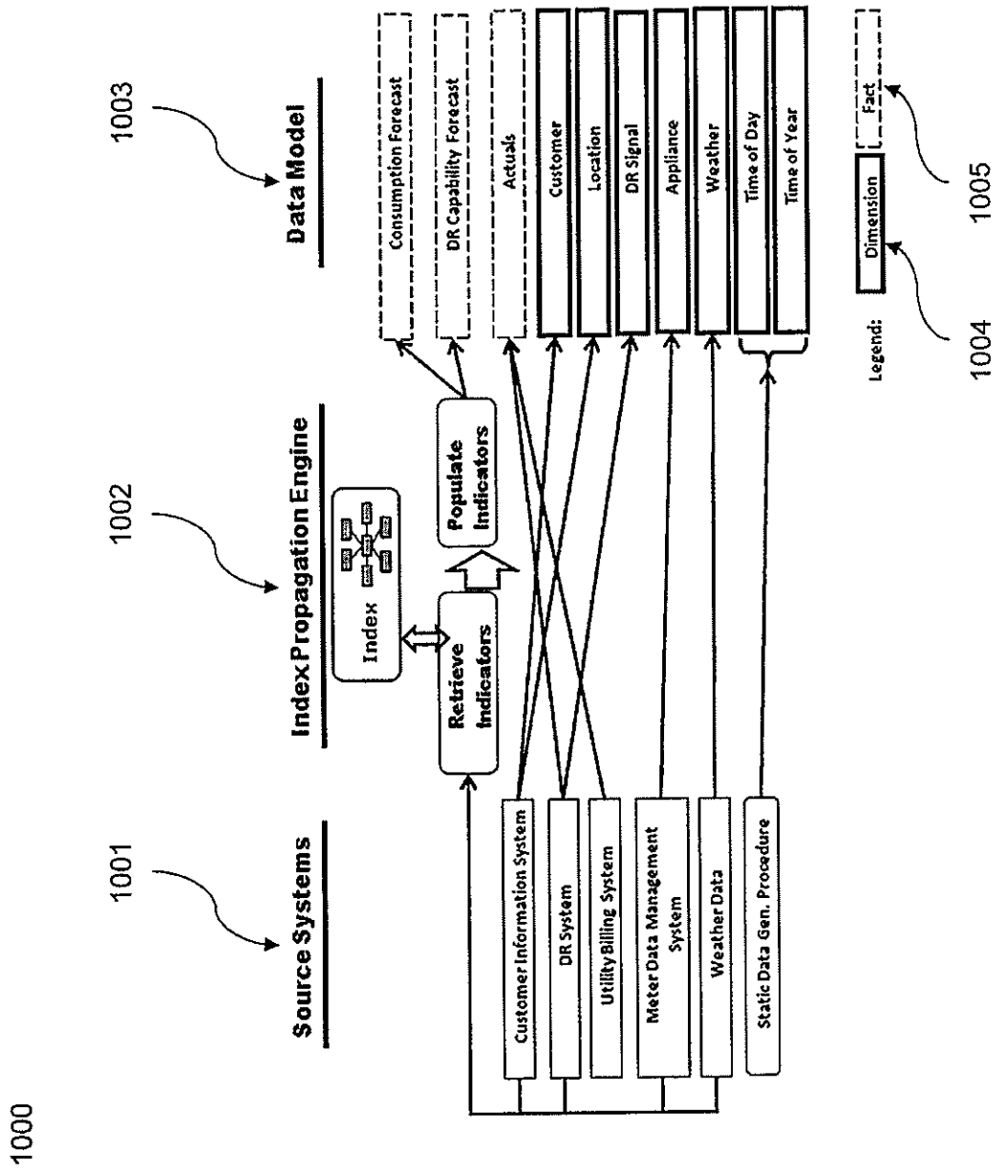

1000
1001
1002
1003
1004
1005
Source Systems
Index Propagation Engine
Data Model
Customer Information System
DR System
Utility Billing System
Meter Data Management System
Weather Data
Static Data Gen. Procedure
Retrieve Indicators
Index
Populate Indicators
Consumption Forecast
DR Capability Forecast
Actuals
Customer
Location
DR Signal
Appliance
Weather
Time of Day
Time of Year
Legend:
Dimension
Fact

FIG. 10

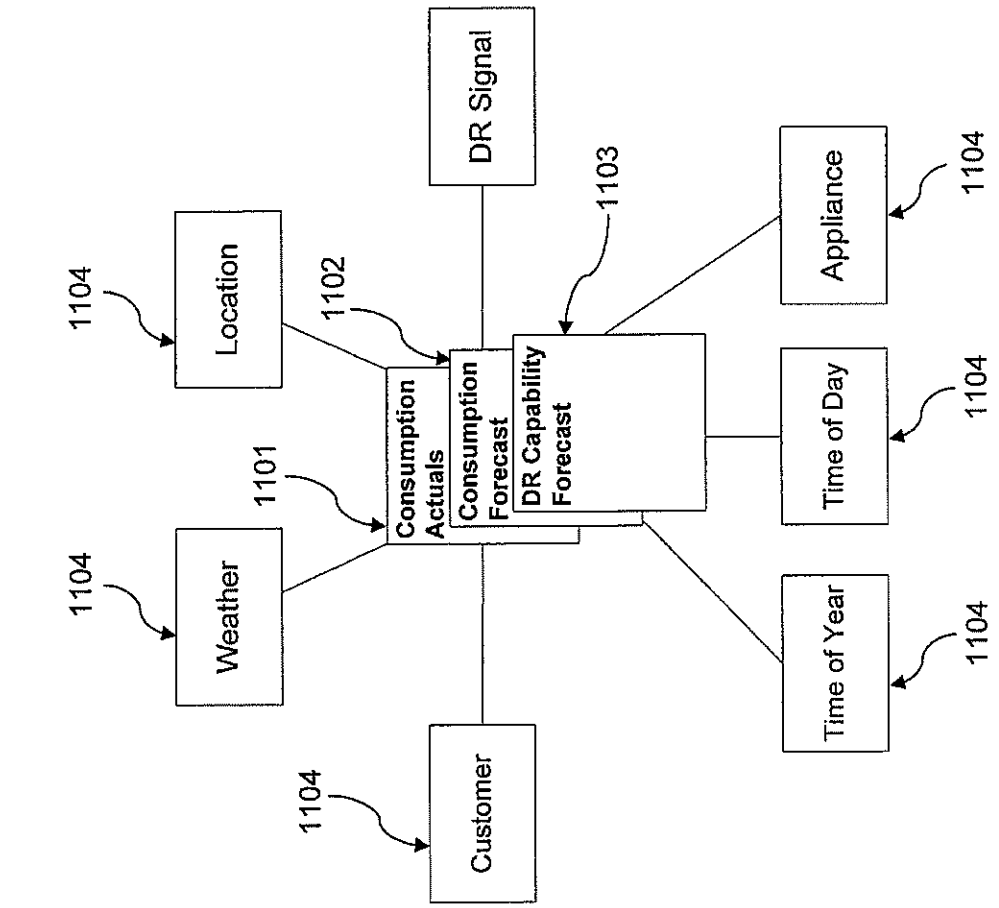

1100
1104
Location
1102
1104
Weather
1101
1104
Customer
DR Signal
1103
Consumption Actuals
Consumption Forecast
DR Capability Forecast
Appliance
1104
Time of Day
1104
Time of Year
1104

FIG. 11

1200

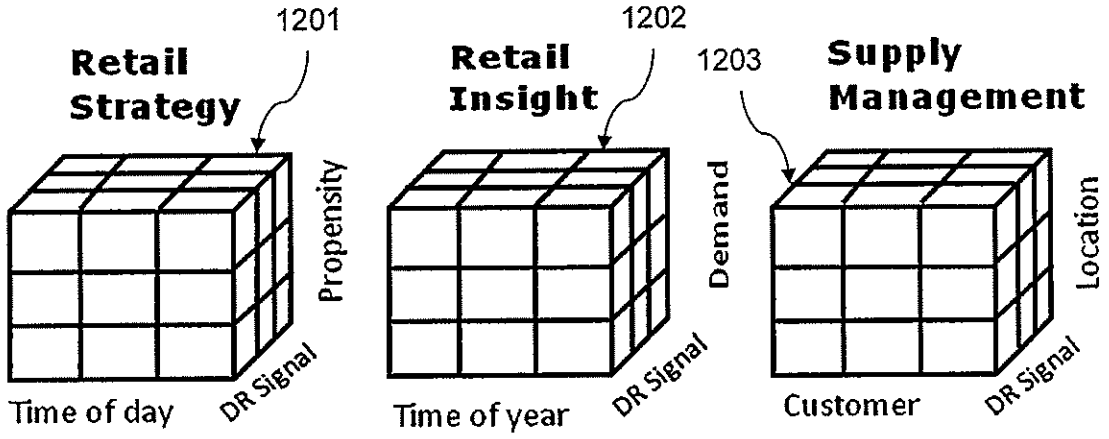
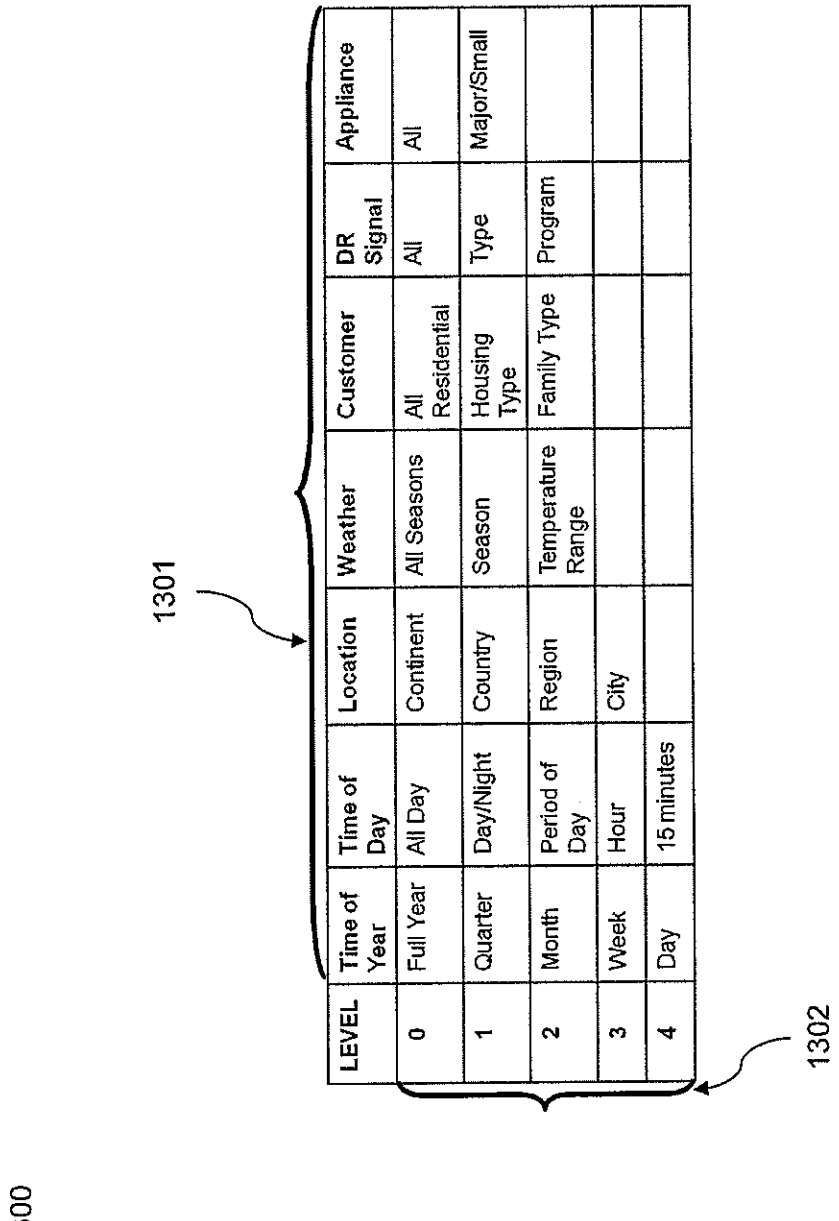

1201
Retail Strategy
Propensity
Time of day
DR Signal
1202
Retail Insight
Demand
Time of year
DR Signal
1203
Supply Management
Location
Customer
DR Signal

FIG. 12



LEVEL	Time of Year	Time of Day	Location	Weather	Customer	DR Signal	Appliance
0	Full Year	All Day	Continent	All Seasons	All Residential	All	All
1	Quarter	Day/Night	Country	Season	Housing Type	Type	Major/Small
2	Month	Period of Day	Region	Temperature Range	Family Type	Program	
3	Week	Hour	City				
4	Day	15 minutes					

FIG. 13

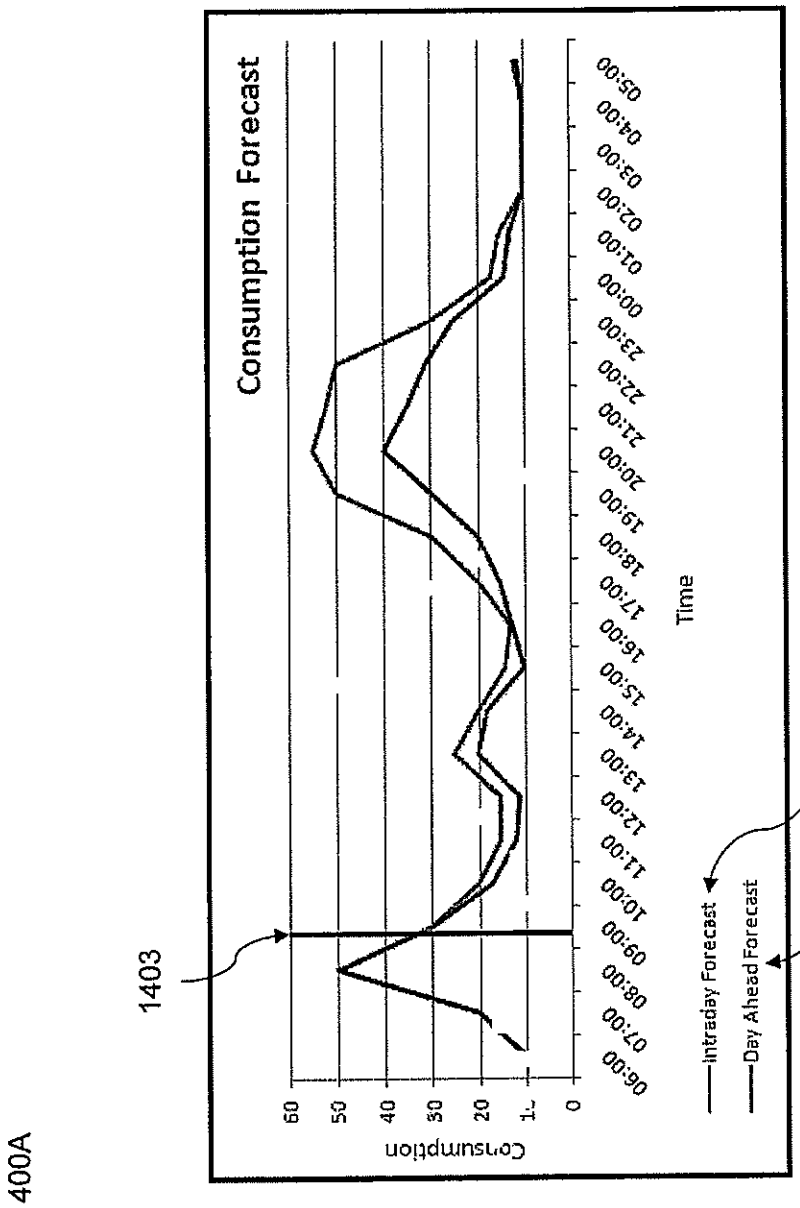

1400A
Consumption Forecast
Consumption
60
50
40
30
20
10
0
Time
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
00:00
01:00
02:00
03:00
04:00
05:00
Intraday Forecast
Day Ahead Forecast
1401
1402
1403

FIG. 14A

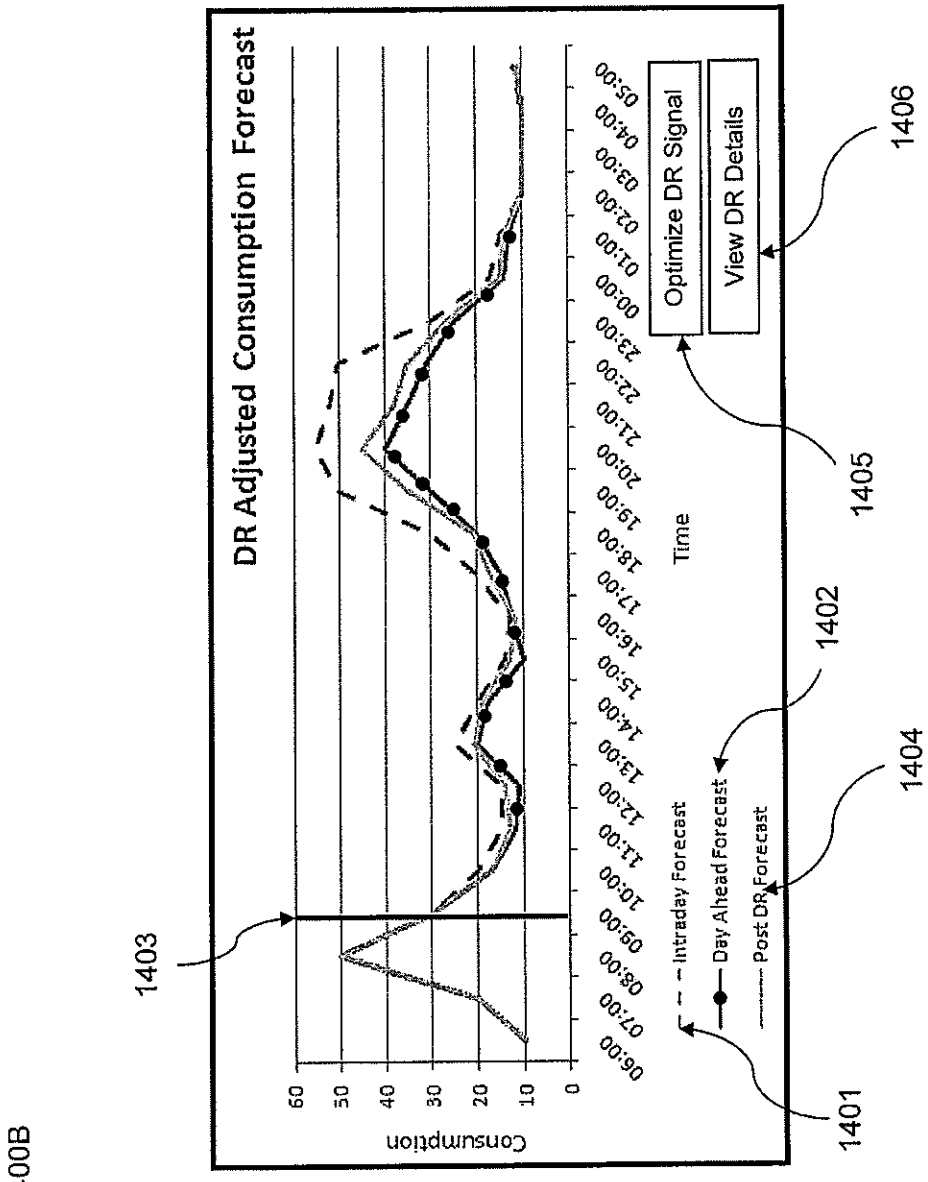
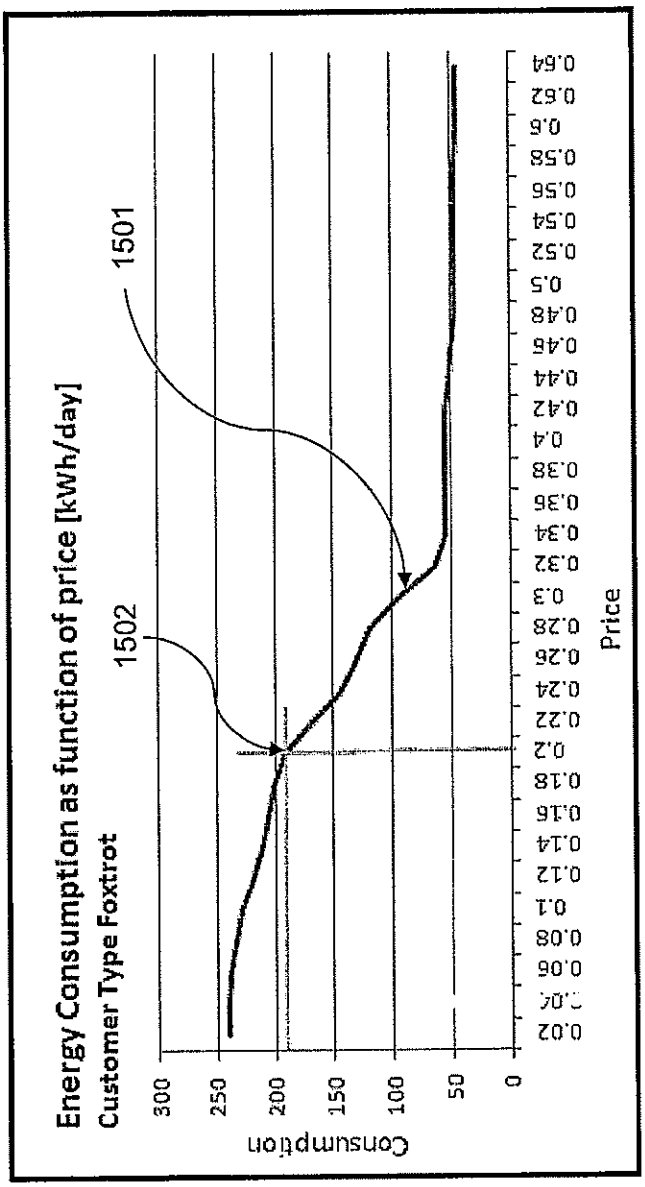

1400B
DR Adjusted Consumption Forecast
Consumption
60
50
40
30
20
10
0
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
00:00
01:00
02:00
03:00
04:00
05:00
Time
Intraday Forecast
Day Ahead Forecast
Post DR Forecast
Optimize DR Signal
View DR Details
1401
1402
1403
1404
1405
1406

FIG. 14B


Energy Consumption as function of price [kWh/day]
Customer Type Foxtrot
1501
1502
Consumption
300
250
200
150
100
50
0
Price
0.64
0.62
0.6
0.58
0.56
0.54
0.52
0.5
0.48
0.46
0.44
0.42
0.4
0.38
0.36
0.34
0.32
0.3
0.28
0.26
0.24
0.22
0.2
0.18
0.16
0.14
0.12
0.1
0.08
0.06

1500

FIG. 15

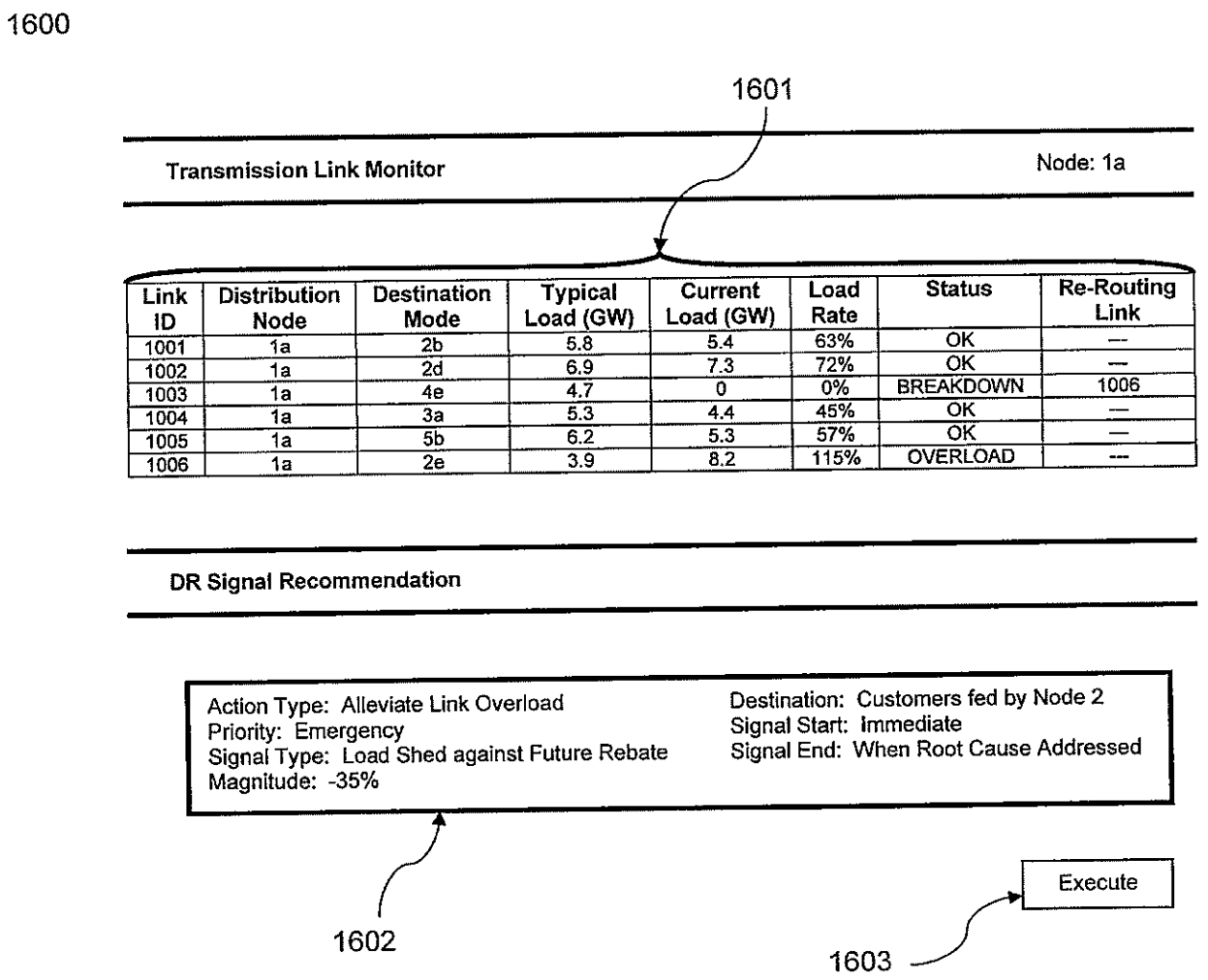

1600
1601
Transmission Link Monitor
Node: 1a
Link ID
Distribution Node
Destination Mode
Typical Load (GW)
Current Load (GW)
Load Rate
Status
Re-Routing Link
1001 1a 2b 5.8 5.4 63% OK —
1002 1a 2d 6.9 7.3 72% OK —
1003 1a 4e 4.7 0 0% BREAKDOWN 1006
1004 1a 3a 5.3 4.4 45% OK —
1005 1a 5b 6.2 5.3 57% OK —
1006 1a 2e 3.9 8.2 115% OVERLOAD —
DR Signal Recommendation
Action Type: Alleviate Link Overload
Priority: Emergency
Signal Type: Load Shed against Future Rebate
Magnitude: -35%
Destination: Customers fed by Node 2
Signal Start: Immediate
Signal End: When Root Cause Addressed
1602
Execute
1603

FIG. 16

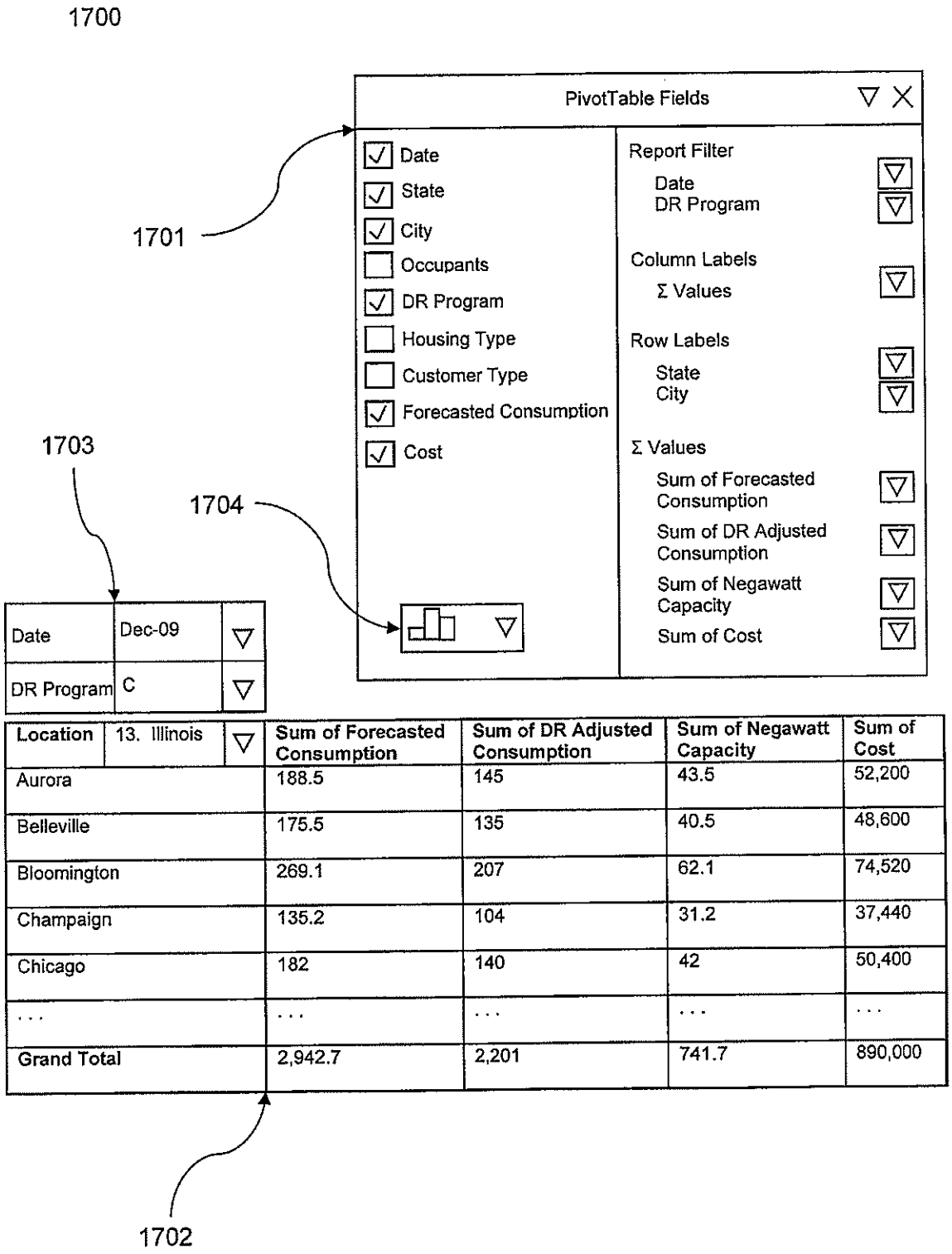

1700
PivotTable Fields
Date
State
City
Occupants
DR Program
Housing Type
Customer Type
Forecasted Consumption
Cost
Report Filter
Date
DR Program
Column Labels
Σ Values
Row Labels
State
City
Σ Values
Sum of Forecasted Consumption
Sum of DR Adjusted Consumption
Sum of Negawatt Capacity
Sum of Cost
1701
1703
1704
Date
Dec-09
DR Program
C
Location
13. Illinois
Sum of Forecasted Consumption
Sum of DR Adjusted Consumption
Sum of Negawatt Capacity
Sum of Cost
Aurora
188.5
145
43.5
52,200
Belleville
175.5
135
40.5
48,600
Bloomington
269.1
207
62.1
74,520
Champaign
135.2
104
31.2
37,440
Chicago
182
140
42
50,400
Grand Total
2,942.7
2,201
741.7
890,000
1702

FIG. 17