



ENTERPRISE ANALYTICS

ANALYTICS WORKBENCH

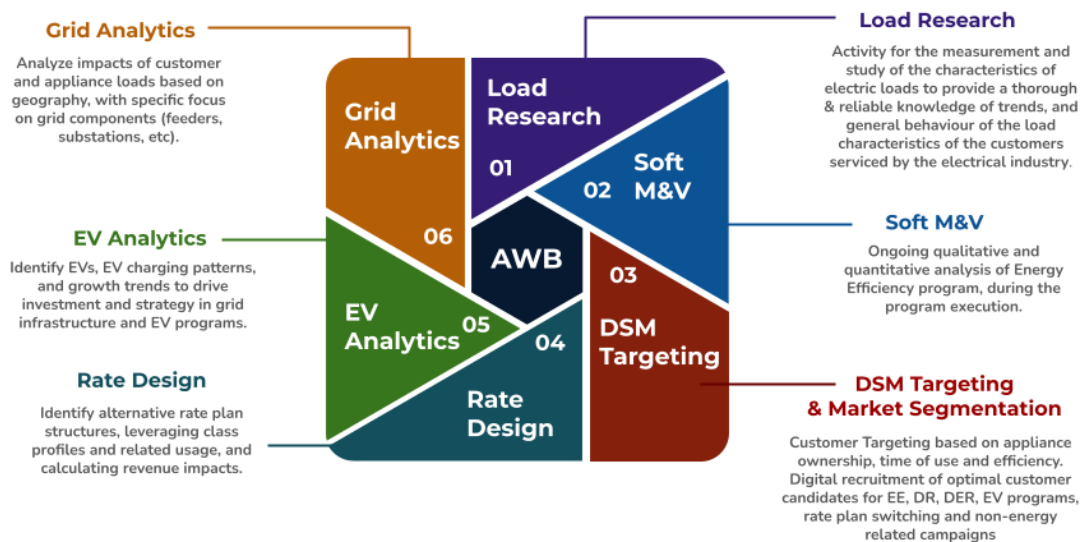


OVERVIEW

Bidgely's Enterprise Analytics solution offers significant operational efficiencies to a wide range of utility operations such as marketing, demand-side management programs, rate design, grid analytics and distributed energy resource management. Analytics Workbench (AWB) is a business intelligence tool that leverages the entire meter data set utilities have already to understand customer demand loads, doing away with manual, costly and lengthy studies of sample populations.

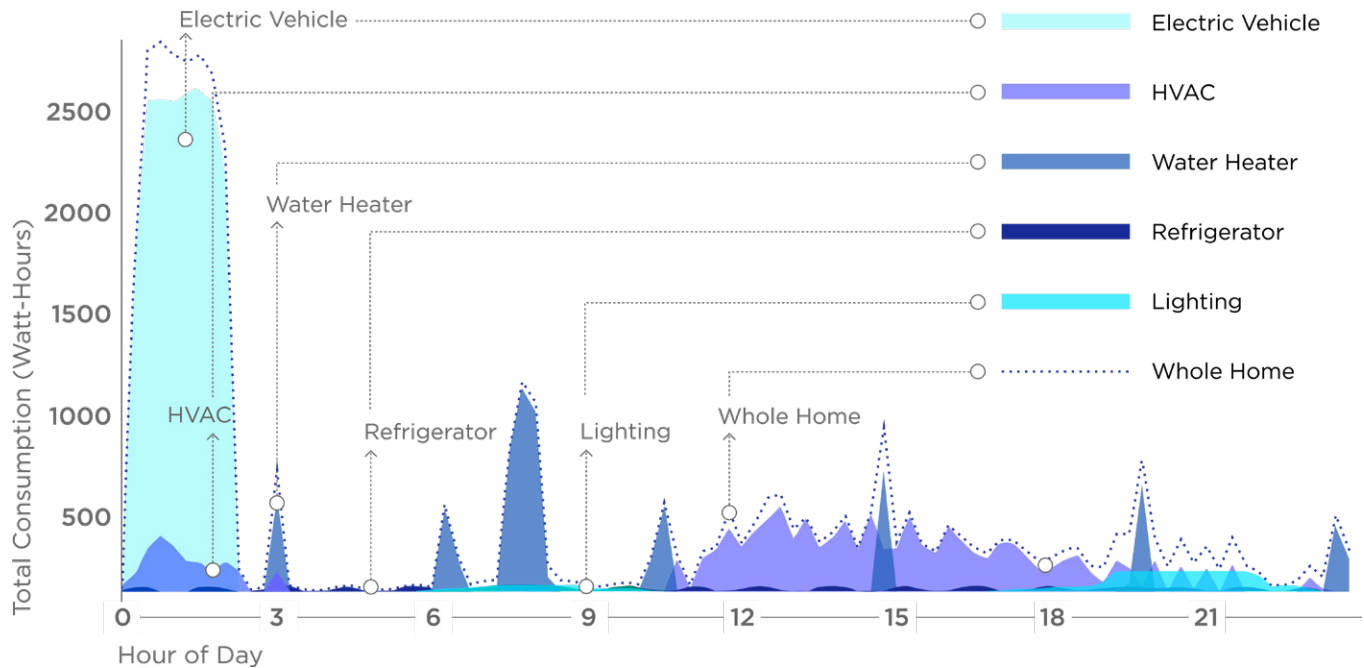
- Leverage your AMI Investment and utilize the full population or super set of load research
- Automate reporting and visualization to free up analysts to perform advanced analysis and create custom reports
- AWB's enhanced targeting functionality can reduce the number of targeted customers, focusing program efforts and outreach only on customers with inefficiencies leading to lower program costs.

Six distinct business use cases can be realized within AWB as shown by the below image.



BIDGELY'S TECHNOLOGY: INTELLIGENCE THROUGH TRUE CUSTOMER ENERGY INSIGHTS

By leveraging the power of our AI platform, Bidgely has developed the **world's most accurate and actionable customer energy profile**. Our AI-driven insights for each customer include detailed appliance attributes and usage characteristics, digital engagement behaviors, propensity modeling, and a multitude of customer attributes that our platform identifies -- all derived from actual customer behavior. The unique technology that enables appliance-level insights and associated lifestyle insights is called load disaggregation. Bidgely's load disaggregation uses energy usage data from existing metering infrastructure and extracts the signatures of appliances in the home to identify true usage patterns.



17 Patents,
Safe IP

No Hardware
Required

Applicable For All
Meter Types

Zero Customer
Inputs Required

Bidgely pioneered load disaggregation in 2011 and has 17 patents. We initially developed the capability to detect appliances and estimate their energy consumption, and we have since gone further to identify the hours during which appliances are used, their size, their relative inefficiency and more. At the same time that our platform identifies appliance-level intelligence, the platform is also generating a diverse and detailed set of attributes for each customer:

- Demographic attributes
- Lifestyle attributes
- Appliance-level attributes
- Digital engagement attributes
- Analytical insights
- Propensity attributes
- Premise attributes
- And more...

Taken together, these attributes make up an accurate and actionable profile for each customer. This includes appliance ownership (for 9+ categories including heating, cooling, lighting, refrigeration, water heating, pool pump, EV, solar, plug load), energy usage by appliance (in kWh, therms, CCF, cost), and time of use by appliance (daily, weekly and seasonal load profiles; peak usage; off-peak usage; etc.). It also includes the relative efficiency of a customer's appliances, the customer's lifestyle pattern, and propensity scores for adoption and engagement with programs, products & services.



Customer Segmentation and Targeting

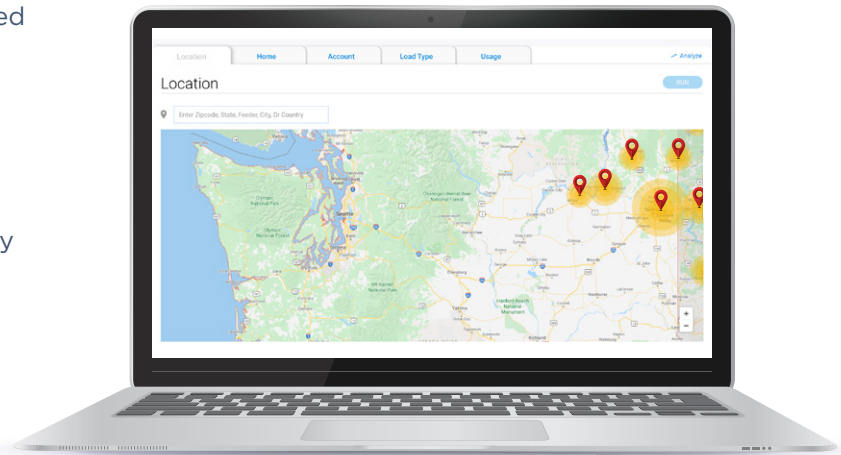
Broadcast non-targeted marketing for various programs have high marketing costs, and result in non personalized consumer interactions, and enable free riders to get rebates.

Avoid blanket marketing or marketing to the wrong audience for energy efficiency, demand response or revenue expansion programs. Quickly run analyses across your customer base with the deepest insights on customer behavior and appliance usage in order to make key decisions around your program plans, offerings, and engagement strategy.

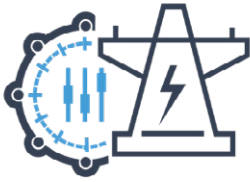
Bigdely helps utilities segment customers by appliance ownership, total usage, and time of usage. Hyper-target every program knowing who is using that load and how inefficient they are and when they are using the appliances (for DR). All done via load disaggregation using AMI meters.

Use Cases

- Target top candidates for **electrification initiatives**: Customers with gas-fueled space heating and water heating, customers with high propensity
- Target top candidates for **energy efficiency programs**: Customers in specific locations who have relatively inefficient specific appliances
- Target top candidates for **demand response programs**. For example: who is using the most amount of heating or cooling or pool pump or EV in peak hours.



Geographical Mapping of Customers with Specific Load Type



Load Research

Using small incomplete sample sets to extrapolate to the entire population relies on a high degree of approximation, and is non-scalable, expensive, and gets outdated fast.

Improve accuracy by using your full customer data as a data set rather than small samplings of metered homes or surveys to infer your load curves. Automate and enrich your load research with a full view of end use analysis, customer and rate types, and load curves. Bidgely provides load shape and appliances contributing to the load shape by the hour on weekdays or weekends, summer or winter, across different geographies and for different rate plans. Save thousands of hours of time spent on manual analysis that becomes obsolete.

Use Cases

- **Identify temperature impacts** on end use
- **Target** program enrollment/recruitment such as the ideal participates for a Demand Response program
- **Automate** 8760 hourly load profiles by any segment or filter
- **Conduct thermal event load analysis** in real-time
- **Run quick data aggregation analysis**, for example look at all AC loads for specific zip code for a specific substation
- **Support Virtual Power Plant (VPP) capacity calculation**



Hourly Usage view optionally displays comparison of daily load across different months weekdays



EV Analytics

Avoid not knowing who owns an EV, when they are charging and what is the amplitude of chargers. You don't need to rely on information from sources like the DMV which can be expensive and incomplete or outdated.

Leverage your AMI data to get a 360 view of EV ownership, charging level and time of charging across customers on your grid. Bidgely is proven to be more accurate and precise than DMV data or customer surveys that are prone to biases. Bidgely detects who has EVs and analyzes consumption patterns, charging level and peak charging customers

Use Cases

- Run **EV analysis** on the presence, growth, geographic concentration, and load impacts of EVs
- **Optimize your EV programs,** and create targeted personalized programs to enroll EV owners into TOU rates or managed charging. This avoids broadcast marketing risks of spending dollars on the wrong participants
- **Improve general forecasting** which can be more accurate than user inputted EV data
- **Support DERMS recruitment & planning** for direct load control programs
- **Tap into shiftable vs non-shiftable loads**

Summary
Total Number of EV Customers & EV Consumption Over Time

Monthly & Daily Usage
Breakdown of EV usage by month or day

Hourly Breakdown
Breakdown of EV usage by month or day



Hourly EV Load Analysis for a specific region



Grid Planning & Operations

Current solutions are not equipped to deal with complex DERs like EVs, Solar and batteries. EVs being two way load sources and moving locations makes it too complex to be handled by traditional methods.

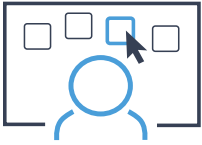
Bidgely incorporates the presence of renewable and EV assets on your grid. Quickly understand impacts, trends and potential of appliance adoption, energy efficiency, load shifting, DERs and electrification. Feed the most accurate customer demand data into your ADMS to prepare for the renewables of the future.

Use Cases

- **DER forecasting**
- **Map grid assets** and identify constraints and hot-spots in order to predict failure or operations change needs
- **Risk Modeling** - transformer load analysis
- **Understand capacity utilization** on your feeders, substations and distribution transformers in order to justify where infrastructure improvement is essential
- Run **NWA analysis**: Overlay load-constrained assets with load reduction and load shifting opportunities



Grid Planning Capacity Analysis



Rate Design

Extensive rate analysis is costly and time consuming. Broad rate class analysis can lack deep insights.

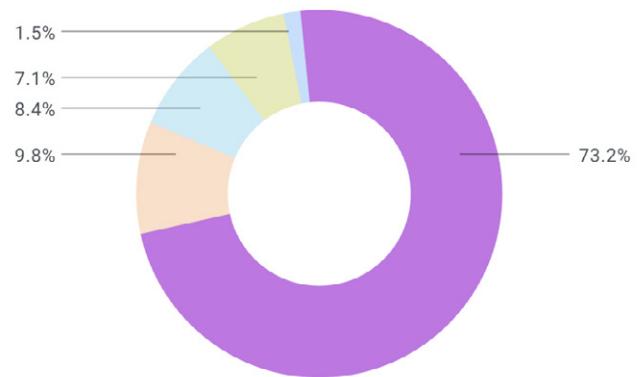
Make data driven decisions around rate design and speed up your regulatory filings. Usage data exposes how well customers are leveraging existing rates and what opportunities there are to maximize comfort and costs. Bidgely helps compare multiple rates and their effects on usage.

Use Cases

- Run **rate analysis**: Compare your rate classes against one another in terms of load shapes and cost to serve
- **Evaluate rates**: Estimate changes in load shape from rate adoption.
- **Design new rates** to address peak demand, EVs, Solar, and other DERs.
- **Identify top candidates** for rate promotion and adoption: Determine the best available rate for each customer

Rate Plans

RES-00013 RES-00016 RES-05001 RES-00003 RES-0001



Rate Analysis



Real Time Continuous Program Measurement

Annual M&V does not tell utilities when their programs are running off track which leaves them with reactive options - missing targets.

Bidgely enables managers to use data to drive more successful and agile programs. AWB tells on a daily or monthly basis how programs are performing against control or self (pre treatment) and allows for proactive intervention for non performing programs.

Use Cases

- **Analyze ongoing programs**, such as energy efficiency programs, to evaluate success and identify areas for improvement.
- Evaluate programs over time
- Evaluate treatment vs control or segments against one another for each customer



IMPLEMENT QUICKLY - SEE RESULTS TOMORROW

Bigdely's **Analytics Workbench** product ensures that program managers, marketing teams, grid planners, and business analysts can quickly gain value from Bigdely's analytics. The user-friendly interface simplifies the execution of queries and supports a variety of visualization options. Users of the product can easily share outputs across teams.

The core data input for the tool is meter data, which we enrich with weather data, premise data, and demographic data to generate the expansive insights detailed above. In addition, the flexibility of the product allows it to readily incorporate existing utility data sources for customer attributes, program participation and more -- all of which can be leveraged to further refine the customer insights made possible through Analytics Workbench. Critically, Analytics Workbench requires **no investment in additional hardware nor any customer inputs**.

Bigdely's solution is a low-risk, turnkey Software-as-a-Service platform that allows for rapid implementation and seamless rollout of new capabilities over time. This can be delivered to your business analysts in three ways:

- 1. Easily Customizable Exportable Reports:** Export into your data lake or marketing automation system to allow your data analysts to acquire super data power in their analysis.
- 2. Analytics Workbench Business Intelligence Tool:** A BI tool for your business managers to slice and dice the data and run on-demand target lists of segmented customers into your desired marketing engines.
- 3. API Integration into Existing Platforms:** Establish automated calls for relevant energy insights within your grid management, business intelligence, and marketing automation to centralize decision making

The data required for Bigdely's AWB solution is AMI data (both historical and ongoing data) and select customer data. Typically, Bigdely and its partner utilities set up a transfer to occur daily (or at an agreed-upon frequency). The specific data required is:

- **Energy usage data: interval usage data in terms of watt-hours for each interval**
- **Customer enrollment data: account information, premise address, email address, etc.**
- **Monthly billing data: total invoice amounts by utility account**

With this single streamlined process, utilities can address a wide variety of use cases related to customer intelligence and grid intelligence.

The Impact Before Bidgely

Potential for diminished brand perception from irrelevant communications

Lower engagement and adoption rates from messaging without context

Wasted spending on marketing and incentives for customers who aren't right for a program

Quickly outdated analyses that don't capture dynamic changes in appliance usage and DER adoption

Overburdened internal teams performing analyses in house with a limited set of tools

General rather than specific intelligence about behind-the-meter assets in specific locations

The Impact with Bidgely

Stronger brand perception from relevant and tailored communications

Higher engagement and adoption rates from hyper targeting

Efficient spending on marketing and incentives focused on the right customers for the right program

Dynamic analyses that capture every change in appliance usage and DER adoption

Accessible tools and insights for internal teams performing analyses

Specific intelligence about behind-the-meter assets across the grid

GET STARTED

Interested in learning more about how Bidgely's UtilityAI platform and Analytics Workbench product can benefit your utility?

Contact one of our representatives at utilityai@bidgely.com to schedule a demo and see how UtilityAI can drive more value for your customers and your business.

Learn More at <https://www.bidgely.com/resources/resources-ami-driven-insights-report/>

