

## THE CONCEPT IN A NUTSHELL

# How Truman Data's *Energy Coop* systems transform demand response

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Truman Data's two integrated systems enable end-customers, such as cities and other large real estate owners, to reduce energy use, generate a new revenue stream, and, most importantly, strengthen their bargaining power when negotiating with energy sellers competing to become the city's energy seller. At the same time, these systems offer energy sellers an alternative way to source demand response, improve prediction accuracy, and automate imbalance-settlement reporting. As a balance-responsible entity, the energy seller must balance anyway, but if it has an end-customer using the Energy Coop solution, it can do the needed balancing without new investments. The Energy Coop solution is a CAPEX 0 opportunity for energy sellers and producers, and it is fully automated.

## THE TWO INTEGRATED SYSTEMS

**1) The database \* connects the real estate to the cloud with market information, and 2) the device-level AI-software \*\* manages every energy load** granularly in each of the connected buildings in real time.

Together, these two **integrated systems** enable the creation of controllable batches of tradable flexibility assets for the energy seller that holds the supply contract for the customers, e.g., a city's buildings.

| \* the Energy Coop solution | \*\* the ForeCoop Edge device software |

Energy Coop is a BESS-first platform: the battery energy storage systems (BESS) in the connected buildings are optimized and traded together with the buildings' other energy loads, as one flexibility asset. This asset changes by the minute and the hour, following the external market and the internal usage of the buildings and their BESS (The BESS dimension of the solution is described in more detail further below).

In the integrated system setup, the energy seller, as the balance-responsible energy company, traditionally manages its position by purchasing the daily, hourly, or last-minute flexibility it needs on the Nord Pool market. From now on, however, the end-customer can offer that flexibility to its energy seller through the Energy Coop platform. The energy seller can source the needed Day Ahead and/or Intraday flexibility internally from its own customer, who sells the often costly flexibility at a more favorable price, say 7% below the equivalent demand response batch available on Nord Pool at the same time.

The discount, whatever it is, is agreed between the flexibility buyer (the end-customer's energy seller) and the flexibility seller (the energy user, i.e., the end-customer). If the energy seller purchases demand response directly from its own customer (in this concept paper described as a city), the relationship between these two parties will be strengthened, making it very hard for any other energy seller to intervene.

The dynamic above presents a disruptive model that could eventually evolve into an energy consumption-driven market ecosystem, rather than the current production-driven one.

## A NEGOTIATING WEAPON

The Energy Coop solution's energy cost-efficiency model not only optimizes electricity usage, **reducing end-customers' energy costs by 10 to 20%**, but also serves as **a negotiating weapon for end-customers**. It puts end-customers, the real estate owners, in a position to require electricity sellers to purchase all the demand-response capacity of their buildings at unprecedented price levels that no flexibility service provider can match.

## ENERGY COOP AND THE NORD POOL MARKET

Truman Data's cloud database, fed by the Energy Coop platform, offers a lower-cost alternative by continuously monitoring Nord Pool's real-time ask and bid prices for demand response. At the same time, it tracks operational data through the platform-connected ForeCoop SaaS (Edge device solution) across an extensive network of end-customer-owned buildings. Because the software (Edge device) is installed separately in each building, it creates a digital energy twin of the entire building stock and all behind-the-meter loads, indicating when and where consumption can be optimized to increase or decrease efficiency.

In this way, Energy Coop is a parallel alternative to the Nord Pool market, which sets the rhythm for the Nordic markets. On the Nord Pool marketplace, flexibility sellers are available, and the price curve for each Demand Response (DR) quantity reflects the 15-minute fluctuations in the cost of each flexibility batch. Energy Coop monitors those bids and asks and can offer sellers and buyers the same price patterns on its platform, but cheaper, for demand response capacity not available elsewhere because it is new flexibility.

When an energy seller's electricity production rises or falls for any reason, the company, regulated as a Balance Responsible Party (BRP), must respond quickly to maintain balance. That is the flexibility the BRP can now buy more cheaply from its own customer, provided the end-customer has a virtual power plant, the Energy Coop platform, for its building's energy and BESS assets.

## THE INFOGRAPHIC

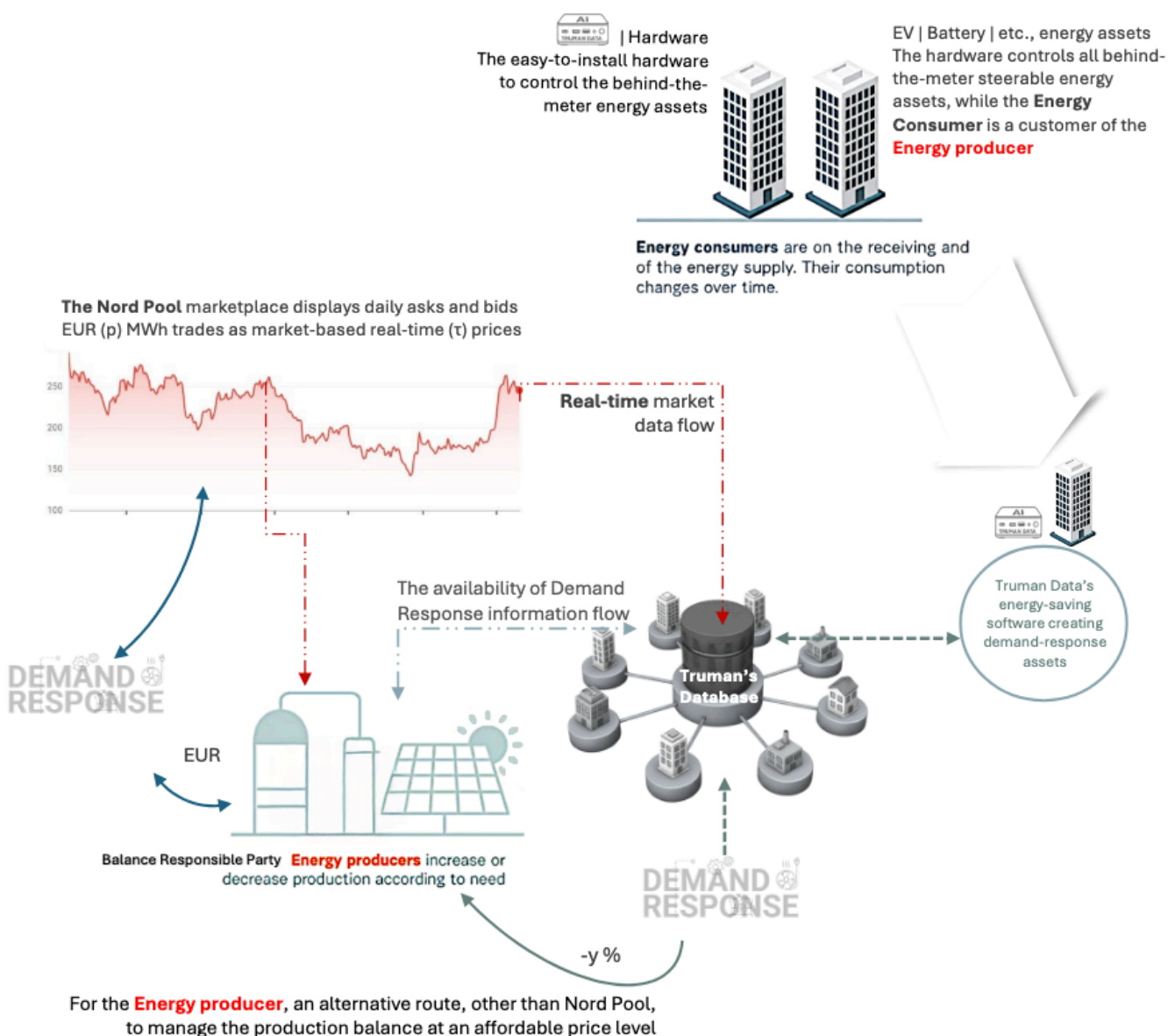
The infographic below makes this clear: the city's energy seller accesses a cheaper, more integrated alternative by purchasing the needed flexibility directly from the city's real estate portfolio, rather than relying solely on external sellers on Nord Pool.

Electricity end-users, i.e., the city's buildings, are equipped with Truman Data's Edge device, which connects all the buildings' energy assets to the Energy Coop platform. The Edge devices run ForeCoop SaaS, which gathers and controls real-time data from EVs, BESS, and other behind-the-meter energy assets. Together, they form a virtual pool of flexibility batches that the Energy Coop platform coordinates automatically for the end-customers in real time. The available flexibility pool changes each minute based on how the building uses power, the time of day, and other real-world factors such as weather, season, grid stability, and current electricity spot-price trends.

The AI that coordinates this pool works as a loop of four steps. It **predicts** how much flexibility the properties, and the batteries within them, can provide together. It **controls** the loads and batteries in each building within the limits the end-customer sets. It **trades** the combined flexibility on the market. And it **negotiates**: the result shows the end-customer what its flexibility is really worth, and that is what the end-customer takes to the table when negotiating with a new energy seller.

## To put this more bluntly

The Energy Consumer (the city) in this ecosystem can effectively “force” the energy seller, i.e., the balance-responsible party, to buy all required demand response from the end-customer itself, as in the example with a 7% (-y%) discount to the prevailing Nord Pool demand response price, rather than the energy seller sourcing the flexibility elsewhere, provided this buyback is embedded in the energy purchase contract. This remains commercially acceptable to the energy seller because it must procure demand response anyway, and ultimately, price is the only decisive variable.



**BATTERY ENERGY STORAGE (BESS)***What does a small fleet of BESS do when added to the concept described in the equation above*

In short: the same thing, only more of it. The whole concept above rests on one thing: how much flexibility the city has to sell to its own energy seller. Adding a right-sized BESS (battery) to a building doubles the flexibility the building already offers and, with it, the end-customer's negotiating strength with any energy seller. In plain terms, a building with a battery has twice the flexibility it had before, and the energy seller has even less reason to look elsewhere.

The batteries join the same virtual pool as everything else in the building. The Edge device steers them together with heating, ventilation, and EV charging, within the limits the customer sets, and Energy Coop packages the combined flexibility into trades, much like on Nord Pool's Day Ahead and Intraday markets. Large stand-alone batteries already take part in Fingrid's reserve markets. Energy Coop extends this to smaller building-level batteries by aggregating their volumes across a portfolio. Connect a few batteries to the portfolio's biggest buildings and the whole portfolio becomes a bigger virtual power plant, with its owner as the market maker.

Truman Data's numbers show what a small fleet of batteries adds. The 70-building municipal pilot proved that the flexibility works: optimization cut annual electricity costs by 11.4%, and calculated flexibility trading revenue added a further 4.2% of the annual electricity bill, **a total benefit of 15.7%**. In a separate Truman Data calculation, connecting 3–7 small and mid-size BESS solutions to Energy Coop alongside the buildings is projected to raise the municipality's total cost benefit by +10 percentage points, reaching **a total of over 25%**. In the equation, adding BESS doubles or triples the flexibility trading revenue (the +4.2%) and makes the optimization more effective, lifting the electricity cost cut from 11.4% to between 15% and 20%, depending on the BESS add-ons.

Energy Coop shows the customer what its flexibility is worth at real market prices, as a forecast for a week, a month or a year. The customer therefore trades at the prices it sets, not the energy seller's, without binding price terms, and can judge any energy seller's offer on facts instead of guesswork. Adding batteries to the portfolio can double the flexibility when done right, which weaponizes the end-customer with even more bargaining power when dealing with energy sellers.

Truman Data stands on the customer's side of the table here, too. Truman Data does not sell or own batteries or any other customer hardware, so the batteries and the value they create always remain under the customer's own control. Many Battery-as-a-Service offers tie customers to five- to ten-year contracts and fixed prices, with much of the revenue flowing back to the investor and the service provider. Truman Data turns that around: property owners planning investments in battery energy storage can have Truman Data calculate what their battery-equipped buildings would save and earn on Energy Coop before committing to any battery vendor. Truman Data helps customers arrange financing for their BESS solution without long-term lock-in and earns a share of the customer's earnings, so both interests align.

