

A one-of-a-kind combination of forecasts and real-time data for planning and managing homes, businesses, warehouses, and other facilities, along with their energy systems and resources

PROJECT TECHNICAL PROFILE / NOVEMBER 1, 2026

01 / What We're Building

TomoAiCore™ grew out of a need to bring forecasts and real-time data together and connect them to the way homes, businesses, warehouses, and other facilities actually operate. As we researched and tested available solutions, we found no system that brought these elements together across the full scope of energy generation, storage and consumption, heating, gas and water use, coordination of energy sources, electric mobility, and connected applications. That is why we are developing TomoAiCore™ as a shared ecosystem for users, equipment manufacturers, and application developers: a system in which forecasts and actual operating conditions work together. Our pricing goal is for the end user's monthly cost of using TomoAiCore™ to be less than the price of a single pack of cigarettes - an investment in energy savings that helps your finances instead of harming your health.

We are developing TomoAiCore™ as a modular system with a purpose-built architecture that combines layers and modules. It brings real-time data, historical records, forecasts, economics, and the operating needs of the site together in one coordinated operating plan. It connects electrical energy with energy stored as heat, equipment operation, and people's daily routines. Its role is to support decisions for the whole building or site: when to use, store, buy, or sell energy, and when to provide hot water, heat the building, or charge an electric vehicle.

The starting point is a continuously updated picture of the installation's actual operating conditions. We combine that picture with forecasts of generation and demand, available energy prices, and user requirements. The goal is a clear plan that helps users understand the recommended approach and its benefits. Fresh measurements then show how actual conditions compare with the plan and inform the next update.

We tailor the solution to each user and setting. Connections can be added over time to meet the equipment and operating needs of a home, office, business, or building.

Computing platforms that match the scale of the system: for everyday installations, we envision compact computers such as the Intel N150. For larger systems and more demanding workloads, we also plan to deploy on NVIDIA Jetson. We are developing TomoAiCore™ for installations of different sizes and computing requirements.



02 / What We Connect and Why It Matters

2.1 / Energy sources, storage, and operating context

This overview brings together the project's current building blocks and areas of ongoing development.

Area	Data and Equipment	Role in the Shared Plan
Solar PV	Individual arrays, orientation, tilt, panel ratings, MPPT, and inverter groups	Forecasting generation and the energy available for use at the site.
Wind energy	Wind turbines, generation measurements, and associated control equipment	Bringing wind generation into the shared operating picture and plan.
Hydropower and marine energy	Hydropower, tidal and wave energy systems, generation measurements, and associated controls	Developing connections between water, tidal, and ocean wave energy, other sources, and storage.
Batteries	State of charge, capacity, charging and discharging power, efficiency, reserve, and wear	Allocating energy to on-site use, storage, purchases, and sales; modeling multiple batteries.
Electric grid	Grid imports, exports, and connection characteristics	A shared energy balance and coordination of energy imports and exports.
Energy prices and rate plans	Fifteen-minute purchase and export prices, rate components, fees, and currency	Comparing the economics of different options, including negative energy prices.
Weather	Solar radiation, outdoor temperature, wind, and time-stamped forecasts	Informing solar generation forecasts, heating needs, and plan updates.
Consumption and daily routines	Consumption history, calendars, daily operating windows, occupancy, vacations, and seasons	Forecasting baseline demand and aligning operations with people's needs.
Domestic hot water	Water heaters, storage tanks, temperature sensors, water demand, and heat sources	Estimating the energy needed to heat water and choosing when to do it.

Forecasts and real-time data. One shared context.



2.2 / A Connected Ecosystem

Area	Data and Equipment	Role in the Shared Plan
Gas consumption	Gas meters and consumption records	Measuring, recording, and analyzing gas use and costs over time.
Water and other utilities	Water meters, flow meters, and other utility measurements	Tracking water and other utility use, maintaining historical records, and analyzing consumption.
Heating and source coordination	Electric boilers, gas boilers, heat pumps, solid-fuel boilers, thermal storage heaters, and storage tanks	Coordinated planning and operation, including switching between energy sources.
Controllable loads and surplus energy	Shelly devices, relays, power measurements, controllable loads, and surplus energy controllers	Aligning equipment operation with available energy and user priorities.
Electric mobility	EV chargers, charging modes, measurements, and requested charging windows	Coordinating charging with generation, battery storage, energy prices, and building demand.
Other building systems	Tanks, level sensors, garden pumps, hot tubs, small water heaters, frost protection, and status or alarm inputs	Connecting additional equipment to the shared operating view and plan.
Third-party application bridges - planned	SunnyHome and other monitoring, automation, and energy applications	Sharing information, forecasts, plans, and operating insights across applications.
User interfaces and reports	A web interface, technical diagnostics, household views, and financial reports	Clearly explaining the plan, current conditions, and measured results.



2.3 / Application Bridges and Local Operation



The integration foundation consists of Home Assistant, a selected inverter, and selected control devices with API support. Weather and pricing sources have their own adapters; inputs also include online weather APIs. Integration with additional inverter and battery system manufacturers is underway, with specific discussions progressing. Connections with more manufacturers are part of the ecosystem's continued development.

Examples of collaboration to date include **SolaX Power**, **SunnyHome**, **TECHNOTHERM**, and **WodaTherm™**. These examples represent part of a growing ecosystem of manufacturers and applications. Their connections to the project span inverters, batteries, and monitoring, fireclay-based thermal storage, and SD-IHC and SD-IHC-3P heating controllers. These collaborations bring together experience in energy, heating, monitoring, and control.

Application Bridges: Local Automation and Connected Services

We are developing TomoAiCore™ with an on-site installation as the foundation of automation and application bridges as an extension of that foundation. Homes, businesses, and other automated spaces need to stay in touch with what their equipment is actually doing. That is why the design includes direct connections to sensors and control devices, along with continued automation when the internet connection is interrupted.

Cloud applications provide remote access, dashboards, and additional services. Connecting them to the on-site installation brings those capabilities together with automation in the space itself. **Continuity of local operation is part of the TomoAiCore™ design:** connection outages are a fact of everyday operation, and the system needs to account for them.

Bridges to third-party applications extend this approach by sharing operating information, forecasts, recommendations, and results. They will connect the on-site installation to monitoring, automation, and energy applications, such as SunnyHome, as well as other services. The result is a shared ecosystem that combines immediate awareness of on-site conditions with the capabilities of connected applications and the cloud. Developing these bridges is part of the project's ongoing work.

03 / Forecasting for a Shared Plan

Generation from different energy sources: we are developing coordinated planning for solar PV, wind, hydropower, tidal energy, and ocean waves. For solar PV, information about the installation and expected weather helps forecast available energy. The modular design allows additional sources to be added through integration modules, bringing their actual output and forecasts into the shared plan.

Building demand: operating history helps identify typical household needs and prepare for the hours ahead. The shared view includes both everyday consumption and equipment whose operation can be shifted in time.

Space heating and domestic hot water: planning takes heating, hot water production, and thermal storage into account. Electricity, fuels, and stored heat are considered together with comfort and building needs.

Gas, water, and other utility consumption: the design includes separate measurement, historical records, and analysis of gas and water use. The operating view covers consumption patterns, costs, and changes over time. This information broadens the picture of how a home, business, or building operates.

Coordinating multiple energy sources: we are developing TomoAiCore™ to coordinate several sources and switch between them based on current conditions, forecasts, costs, and user needs. Examples include electric boilers, gas boilers, heat pumps, solid-fuel boilers, and thermal storage tanks. The aim is to coordinate their operation and make use of each source’s contribution to space heating and hot water.

Surplus energy and thermal storage: coordinated planning includes controllers that direct surplus energy to swimming pools and hot tubs, charge underground thermal stores in summer for winter use, and serve smaller thermal storage applications, such as electric thermal storage heaters. These options connect energy available now with both short-term and seasonal heating needs.

Energy prices and rate plans: available purchase and export prices and rate terms help compare the financial value of different options. Planning also accounts for operating costs and user priorities, and includes energy sales, purchases, storage, and discharge.

We continually compare forecasts with actual operation. The goal is a useful outlook for decision-making and the ability to respond as conditions change throughout the day.

04 / Coordinated Operations Planning

TomoAiCore™ brings together expected generation, consumption, available energy reserves, prices, and desired comfort. It uses this shared context to propose how energy and connected equipment should be used. Users set their needs and priorities, and the system incorporates them into the coordinated plan.

Ahead of a sunny afternoon, for example, the system can consider available battery capacity, expected evening demand, hot water needs, EV charging, and the price paid for exported energy together. The benefit is coordinated use of available energy throughout the site. A change in the weather or a user’s requirements can be reflected in an updated plan.

05 / Architecture for Connected Operations

TomoAiCore™ is built around a unique six-layer architecture that provides a shared foundation for different devices, energy sources, and applications to work together. It allows the system to evolve with the needs of homes and buildings, connecting new technologies to coordinated planning and a shared operating view.

Its value lies in how the whole system works together: information from different areas gains shared context, helping coordinate energy use, comfort, and operating costs. As an installation grows, so do the opportunities for connection and practical use.

06 / What Sets TomoAiCore™ Apart

TomoAiCore™ stands out through its original six-layer design and the breadth of its modular connections: forecasts, real-time data, energy sources, devices, and applications working together as one system, with individual devices easy to add or remove. We connect forecasts of generation, consumption, and prices with current, real-time data. The shared context includes generation, batteries, the grid, different heating sources, hot water, gas and water consumption, electric mobility, other appliances, and connected applications. Each area affects the others. Their value comes from coordinating them as a whole.

Forecasts show what we expect. Real-time data shows what is happening now. We are developing TomoAiCore™ to work with both at once. When the weather, generation, consumption, or people's needs change, that change should inform what happens next. The result is ongoing coordination between energy systems and everyday life throughout the day.

The Experience Behind the Project

More than once in an earlier test setup, we encountered a plan that called for buying energy from the grid while actual solar generation was exceeding the forecast. That experience led to a fundamental requirement: the plan must stay connected to the site's actual operating conditions.

That is why TomoAiCore™ combines looking ahead with ongoing awareness of the present. We want to make use of sunshine, wind, water, tides, and ocean waves when that energy is available, respond to current demand, and coordinate electrical and thermal storage with people's comfort. Bringing these relationships together across devices and applications is what gives our system its character.

For users, this means a coordinated plan and a clear operating view. For equipment manufacturers and application developers, TomoAiCore™ provides an environment where their technology becomes part of the whole site's operation and the broader energy system.



07 / Development Progress and Next Steps

Project development: Following an extended period of development in 2026, the alpha phase is scheduled to conclude at the turn of 2026 and 2027. In 2027, the focus will shift to beta development and taking simulations into real-world beta test installations. Development covers installation setup, Home Assistant integration, forecasting, energy and financial planning, operating views, and diagnostics. We continue to connect individual functions and test them in practical operation.

Next steps: ongoing development includes bridges to third-party systems and expanded connections with battery systems, inverters, control systems, solar panels, charging equipment, heating technologies, and other equipment from different manufacturers. TomoAiCore™ is developing a shared ecosystem in which individual technologies can contribute to planning and coordinated energy use. The ecosystem will continue to grow through additional applications, devices, and manufacturers. We also envision V2H and V2G capabilities to connect electric mobility with building energy systems. TomoAiCore™'s modular design allows the system to expand as new technologies and devices emerge.

Our Goal

To create an original modular system that brings forecasts and real-time data together with the practical operation of homes, businesses, warehouses, and other facilities. A system that prepares for future needs while responding to what is happening right now.

To connect different energy sources - sunshine, wind, water, tides, and ocean waves - with electrical and thermal storage, electricity, gas and water consumption, heating, and electric mobility. To give these areas a shared context that brings available energy, operating economics, and people's comfort together.

To develop an ecosystem that grows with users' needs and emerging technologies. Modular connections for devices, energy sources, and third-party applications create opportunities for additional manufacturers, developers, and uses. Each new connection can help the whole system work better together.

The purpose of TomoAiCore™ is to turn individual pieces of information into meaningful connections, and those connections into coordinated operation across the entire space.

TomoAiCore™ · Hudratore · Tomorrow Systems®

Project website · Development · Device integration

"I like the moment when separate pieces of information start to tell the story of a whole day."

Tomo · Chief of PR

Draft for owner review before further use.