Energy-Saving & Automation Guide (Clean Version)

1. Daily Energy Saving Tips

Belgian households can trim their energy bills substantially through simple daily habits and seasonal adjustments. **Heating is the biggest energy user in the home**, so focus on heating efficiency. For instance, lowering your thermostat by just 1°C can shave around 5-7% off your heating fuel use. Try keeping living areas around 19°C instead of 21°C and wear a cozy sweater if needed. At night or when you're out, turn the heat way down (around 15°C); you'll save a lot of energy while you sleep or the house is empty. Only heat the rooms you actually use – if the spare bedroom or upstairs isn't occupied, don't waste heat there. Many Flemish homes have shutters or thick curtains: close them at night in winter to keep heat in (they greatly reduce heat loss through windows), and open them on sunny days to let the warmth in for free.

For daily routines, small changes add up. **Kitchen tips:** When boiling water or cooking, cover your pots with a lid to cook faster and use less heat. Once water or soup is boiling, you can often lower the stove setting and still maintain the boil. Consider turning off electric hobs or your oven a few minutes early – the residual heat will finish the cooking without using more energy. Always use the right size pot on stove burners and if you have an electric kettle, heat only the amount of water you need (it's much faster and more efficient than boiling on the stove or boiling excess water).

Appliances: Make the most of your dishwasher and washing machine by running full loads. Using the eco-mode on appliances saves a lot

of energy – it runs longer at lower power. For example, washing clothes at 30°C instead of 60°C or 90°C uses dramatically less electricity (and modern detergents clean well at low temps). Likewise, the dishwasher's eco cycle, though longer, uses less hot water and power. Try to **air-dry clothes** whenever possible instead of using a tumble dryer – dryers consume a lot of electricity. Belgium's climate can be damp, but even indoor drying on a rack is cheaper (just ensure some ventilation to avoid moisture buildup). If you do use a dryer, make sure to clean the filter each time; a clean filter improves efficiency.

Fridge and freezer: These run 24/7, so keeping them efficient is key. Defrost your freezer periodically (or whenever you see more than ~3-5 mm of frost buildup), because ice buildup makes it work harder. Set the fridge temperature appropriately – 5°C is sufficient for the fridge, and -18°C for the freezer. Colder settings just waste energy. Also, avoid putting hot food directly into the fridge; let it cool to room temp first. Don't leave the fridge door open longer than necessary when grabbing things – in an average family, all those seconds with the door open add up to the compressor running more. And if your fridge or freezer is an older model, consider upgrading to a modern A+++ (or whatever the new EU label equivalent is) model, which can use less than half the energy of a 10-15 year old unit. Over its lifetime, a more efficient fridge pays for itself in energy savings.

Hot water habits: Taking showers instead of baths can drastically cut water heating costs (a typical bath uses 3-4 times the hot water of a quick shower). Installing an economical low-flow showerhead is a cheap upgrade that can maintain good pressure while using up to 50% less water. Also consider a shower timer – challenge your household to keep showers to 5 minutes or under, especially if you

have teenagers who tend to linger! If you have an electric water heater, make sure it's on a timer or at least set to a reasonable temperature (55-60°C is usually enough; higher just wastes energy and risks scaling). Many Belgian homes have gas combi-boilers for heat and hot water, which heat on demand – for those, just be mindful of usage and maybe use the eco mode if it has one (eco mode might delay heating slightly to avoid keeping a hot standby).

Lighting: Switch to LED bulbs everywhere if you haven't already. They use a fraction of the electricity of old incandescent or even halogen bulbs. LEDs have become very affordable and come in all shapes and brightness levels (and they last for years, so less hassle too). Beyond that, cultivate the habit of switching off lights when leaving a room. It sounds trivial, but especially in winter with long nights, an empty room with the light on is pure waste. Use natural daylight whenever possible – open those curtains and blinds in the daytime. In summer, Belgian days are very long (light until 10 pm in June), so you can often rely mostly on daylight for activities; in winter, consider task lighting (like a desk lamp) instead of brightly lighting an entire room if you're just doing one activity.

Avoiding standby waste: Many devices draw power even when off or not in use – these are "phantom" or "vampire" loads. Common examples: the TV cable box or digital receiver, the internet router, chargers left plugged in, the microwave display, etc. Individually they might be small, but together they can account for perhaps up to 5-10% of your electricity usage. An easy fix is to plug clusters of electronics (TV, home theater, etc.) into a power strip and turn it off overnight or when not needed. Or use a smart plug with a schedule (turn off at midnight, on at 6 pm, for example). This way, you're not feeding electricity to devices 24/7 that you only use a few hours a

day. Even just conscientiously unplugging things like the second phone charger, the rarely-used printer, or switching off the PC and monitor fully (not just letting them sleep) can help. Modern appliances are improving on standby, but older ones can be surprisingly hungry (some older set-top TV boxes, for instance, consumed almost as much in standby as when on!). So it's worth identifying these phantom consumers in your house and slaying them, so to speak.

In summary, make energy saving part of your daily routine. None of these tips drastically affect comfort – you likely won't even notice a difference, except when your utility bill arrives and it's lower. It's about **being mindful**: heat and use electricity when you need it, avoid waste when you don't. Over a year, the Belgian climate gives plenty of opportunities for savings (from leveraging the summer sun to being efficient during dark winters). And if you have kids, it can be like a game or eco-challenge to let them participate (who can take the shortest shower, or remember to turn off the lights, etc.).

2. Charging Electric Vehicles Cheaper (In-House Charging)

If you have an electric car (or are thinking of one), home charging will likely be your main way of "fueling" it – and it's typically the cheapest and most convenient. To maximize savings, there are a few strategies tailored to Belgium's situation:

Use off-peak electricity to charge: Most Belgian energy contracts have cheaper rates during the night (if you have a dual tariff meter or a smart meter set to dual mode). Generally, off-peak runs from about 10 PM to 7 AM on weekdays, plus the entire weekend. Charging your

EV during these times can cost some 30% less than during peak daytime hours. For example, if your day rate is around €0.30/kWh and night rate €0.22/kWh, that's a big difference when you're charging a large battery. So, plug in the car at night – you can either manually schedule it or use the car/charger's timer to start at a certain hour. Many EVs and chargers let you program "charge from 11 PM to 6 AM" or similar. This way, you wake up to a full battery that was charged on discounted power.

Consider a smart or dynamic tariff: An increasing number of people are opting for energy contracts that have even more granular pricing. For instance, a **dynamic tariff** changes hour by hour with market prices. In practice, this often means very cheap electricity in the middle of the night or mid-day (when there's surplus solar/wind) and higher prices in early evening. If you have such a plan (and a digital meter is required for it), you can really save on EV charging by targeting those dirt-cheap hours. There are apps and smart chargers available in Belgium that can automate this – you set "I need the car charged by 7 AM" and it will automatically choose the lowest-price hours in the night to do it. Some nights, electricity could be extremely cheap (or occasionally even negative-priced if there's excess wind); a smart system makes sure you benefit from that. Even without a fully dynamic plan, some suppliers offer "super off-peak" EV charging windows, like a very low rate between 1-5 AM. It's worth exploring if your electricity company has a special EV charging add-on or product.

Install a dedicated home charger (wallbox): While technically you can charge an EV from a normal socket, it's not recommended for daily use. A dedicated wall charger not only charges faster but is safer and often has smart features. In Flanders, installation of a home

charging station typically costs between €1,000-€1,500 (hardware and installation). This one-time investment pays off in convenience and capability. A 7.4 kW wallbox can give roughly 35-40 km of range per hour of charging, so an overnight charge of, say, 8 hours could add ~300 km of range – which covers most people's needs. Many chargers are "smart" – they can connect to Wi-Fi and have an app. Through the app you can do things like scheduling (as mentioned), monitoring how much energy the car took (useful if you want to track costs, or get reimbursement from an employer for company car charging), and even integrating with solar or smart home systems. Some advanced ones allow load balancing: they will adjust the charging power in real-time based on other consumption in the house to avoid blowing your main fuse. For example, if your oven and heat pump turn on, the charger might reduce power to keep total draw under the limit. This is great to fully utilize available capacity without expensive grid upgrades, and it avoids peak surges that could increase your capacity tariff.

Cheaper tariffs and incentives: As of 2025, Flanders doesn't have direct subsidies for individuals installing a home charger (a previous federal tax deduction for home EV chargers expired at end 2024). However, some employers provide support if you have a company car – for instance, they might cover installation or provide a charger. Also, there was a new rule in 2025 where employers can reimburse employees for charging a company car at home at a set per-kWh rate (simplifying paperwork). That's not directly a saving for a private individual, but good to know if it applies. In any case, the "incentive" to charge at home is the stark price difference: home electricity per km is much cheaper than public charging or fuel. Roughly, driving an EV might cost about €4-5 per 100 km in electricity (at home rates), whereas driving a petrol car that distance might cost €12 or more in

fuel. That's significant! Even public fast charging, which you'd only do occasionally, is usually more expensive (and should be thought of like a convenience for trips). So to keep your EV total cost low, maximize home (and possibly workplace) charging, minimize pricy public charging.

Time your charge with solar production: If you have solar panels, one of the best things to do is charge your car when the sun is shining. This way you're effectively "fueling" your car for free with your own solar energy (after the upfront panel investment, of course). Many wallboxes have an eco mode that detects when there's surplus solar (i.e., your panels are making more than the house is using) and then channels that into the car. If set up properly, your car becomes a sink for excess solar that would otherwise flow to the grid for little return. In Belgium, solar peak production is usually midday/early afternoon. So if your car is at home then (say you work from home or on weekends), plug it in and let it sip the sun. Even if it's not fully charged by evening, you can always top up at night on cheap grid power. This approach of solar charging maximizes self-consumption of your PV and is extremely cost-effective and eco-friendly.

Watch your capacity peaks: As a quick note, starting in 2023 Flanders has a capacity-based network tariff. This means if you create a very high peak demand in a 15-minute window (for example, turning on your EV charger to full power at the same time as the electric oven and the dryer), you might end up with a high "capacity charge" that month. To avoid this, either don't stack heavy loads all at once or use a charger with load management. Many home chargers can be set to a max current or can integrate with a home energy manager to avoid exceeding a certain threshold. It might be as simple as manually being mindful: don't start cooking dinner in the electric

oven at 6 PM *and* have the car charging at 7 kW at the same time. You could wait to charge the car until after dinner, for instance. Or set the charger to only charge after 10 PM altogether. This way, you smooth out usage and avoid hitting an unusually high peak that costs you more. With a bit of planning, most people can easily stay within reasonable limits (and the grid thanks you too).

Optimize charging speed to your needs: Not everyone needs to charge at the maximum rate every time. If you drive 30 km a day, you don't need 7 kW blasting into the car; even 2 kW (10A on one phase) for a few hours might suffice. Some chargers or even the car's settings allow you to reduce the amperage. Charging slower can sometimes be advantageous: it's gentler on the battery (slightly), and if you have solar, a lower charging rate might align better with your typical surplus. For example, if you often have about 3 kW of surplus solar around noon, setting the car to charge at 3 kW means it will almost entirely use that surplus. At 7 kW, it would draw from the grid because surplus is only 3 kW. So, matching charge rate to solar output or to off-peak window length can be smart. A slow overnight charge is perfectly fine for battery health and meets most routine needs. Save the maximum power charging for times when you really need a quick top-up.

Public charging fallback: Try to do the bulk of charging at home, but it's useful to know Belgium does have growing public infrastructure for when you need it. There are often two types: normal AC chargers (like 11-22 kW posts on streets or parking lots) and DC fast chargers (50 kW, 150 kW, etc. on highways or major hubs). The AC ones can be convenient if, say, you're at a shopping center for a couple of hours – you might get a decent charge and some places have free or discounted charging while you shop. The fast chargers are mainly for

road trips or emergencies when you need a lot of range quickly. They are expensive per kWh, so relying on them regularly would raise your cost of ownership. But using them occasionally won't break the bank and is part of the EV experience. With time, more charging stations are appearing (Flanders aims for a comprehensive network, and private companies like Fastned, Allego, etc., are expanding).

In summary, **charging an EV cheaply at home boils down to: charge during cheap periods (night or solar hours), use a smart charger or timer to automate that, and be mindful of not overloading the grid or your connection at peak times.** Once you set this up, it becomes second nature – you plug in and let the system handle it. You'll enjoy extremely low "fuel" costs and the convenience of a "full tank" every morning. Many Belgian EV owners report that they almost never visit a gas station or even a public charge point, because home (and maybe workplace) charging covers 90+% of their needs. That's the ideal scenario for both your wallet and your time.

3. Dynamic Energy Pricing

Dynamic energy pricing is a relatively new option in Belgium that can offer big savings if you're flexible with when you use electricity. A dynamic tariff means the price per kWh changes every hour based on the wholesale electricity market. In practical terms, electricity might be very cheap late at night or midday when demand is low (or renewables are high), and more expensive in the morning and especially early evening when demand peaks.

For example, under a dynamic plan, you might see prices like 5 cents/kWh at 3 AM, 20 cents/kWh at 5 PM, maybe even 30+ cents during a

really tight peak, and occasionally near zero or negative around noon on a sunny windy Sunday (meaning you could get paid a tiny amount to use power then!). Over a month, you pay whatever the going rate was each hour when you consumed electricity.

Who is it good for? If you have the ability to shift a lot of your usage to off-peak times, you can benefit. Think of people with electric heating or an EV or other large loads that can be scheduled. Or generally being out at work during the day and maybe not running much at the 5-8 PM peak. If you're an energy tinkerer who doesn't mind planning when to do things, it can be almost like a game to use power when it's cheap and avoid when it's pricy. On average, folks who actively manage can achieve noticeable savings (double-digit percentage reductions in cost). And since dynamic prices often align with greener energy (cheap when wind/solar are abundant), you're also using cleaner electricity, which is an environmental bonus.

Who might not benefit? If your household's consumption is mostly during the peak hours and you can't change that (e.g., you have young kids, you cook at 6 PM, everyone takes showers in the evening, etc.), then a dynamic tariff might actually cost you more than a fixed or a standard day/night tariff. Similarly, if you prefer the certainty of a fixed rate and don't want to worry about when you use power, dynamic might not be for you. It does introduce some volatility – one month could be higher cost if there were lots of expensive days (like a cold, windless December) and another month lower if conditions were favorable. You have to be comfortable with that variability and perhaps budget accordingly.

Requirements: In Flanders, you need a digital smart meter to have a dynamic contract. With the smart meter rollout, many people have

that now. In Wallonia and Brussels, dynamic tariffs have been slower to appear because of the meter situation, but that's changing. Also, usually you manage the plan via an app or online portal where you can see the next day's hourly prices (they're set one day ahead). So having a smartphone or computer is pretty essential to keep track, unless you automate everything and don't care to look (but it's wise to have a glance occasionally).

Using a dynamic plan effectively: You'd try to run energy-intensive appliances at times of forecast low prices. The next day's prices are published each evening for every hour. For instance, you might see that tomorrow, prices dip to a low from 1 PM to 4 PM – a good time to charge the car or run the water heater. Or there's a spike at 7 PM – maybe avoid using the clothes dryer right then. Over time, you might develop routines: e.g., do laundry on weekend afternoons (often lower demand, hence cheaper) or charge the laptop and devices in the early morning hours. You can automate some of this with smart plugs and timers as discussed in the automation section. If you have a battery, dynamic tariffs are great – charge it when power is cheap and use it when expensive. If you have electric heating with some thermal mass (floor heating or a storage heater), you can pre-heat a bit when cheap so that you don't need as much during expensive hours.

Realistic savings: It's not unusual for active dynamic tariff users to save around 10-15% on their annual electricity costs compared to a flat rate. Some report even more in 2023 because prices were very volatile and they avoided the worst times. You have to weigh this against the effort or any additional hardware (though often it's just using what you have more cleverly). Also, dynamic rates usually pass through the wholesale price *plus* some fee or commission from the supplier. Make sure to understand the supplier's terms (some might

add a few cents on top as margin, etc.). Even with that, you generally come out ahead if you can be flexible.

Pros beyond cost: One advantage of dynamic contracts is you're contributing to grid stability by moving your usage to when energy is plentiful. It's a very pro-active way to participate in the energy transition – effectively helping utilize renewable energy that might otherwise be wasted and easing the strain at peak times (which might be powered by gas plants). Also, it can be educational: you become very aware of what drives prices (you'll notice patterns, like "wow, dinner time on winter weekdays is always pricey" or "windy nights are super cheap"). Some families involve everyone – e.g., kids learn to perhaps delay turning on a game console until a cheaper hour, etc., making it a household team effort.

Potential cons and how to mitigate them: The risk is if you don't or can't adjust usage, you might hit some really expensive hours. One way to mitigate this is some suppliers have a cap or some protective scheme (for instance, one might offer a hybrid plan: dynamic but with a cap on extreme prices, or a subscription fee that lowers the price, etc.). But generally in a fully dynamic plan, you take on the risk. The worst-case scenario is an extreme peak like during an outage or something where for an hour prices could go very high (in theory they can spike to several euros per kWh in European markets in rare cases). However, Belgium has some price cap mechanisms and such events are rare and often predicted (so you'd get a push notification maybe, and you could ensure not to use power then). If the idea of any hour costing, say, 1€+ per kWh freaks you out, you could set up safeguards – like a home energy management system that literally disconnects non-essential loads if price > X. But for most, simply staying aware via the app is enough: if you see tomorrow at 7-8 PM

looks really high, you'll plan around it.

Another minor thing: billing can be a bit more complex to read (tons of line items, one per hour or per day). But the supplier usually provides summaries.

In Belgium, dynamic tariffs are still new and not widespread. As of mid-2020s, only a small percentage have them, but the number is rising. The government and regulators encourage them in principle, because when electric cars, heat pumps, etc., become mainstream, it's beneficial if not everyone uses them at the same peak hours. Dynamic pricing is one tool to incentivize spreading out the load.

To wrap up: **dynamic pricing can save you money and align your usage with greener power, but it requires a bit of engagement.** If you like the idea of using tech or your own routines to beat the average price, it's worth a try. If not, you can stick to a more conventional tariff and perhaps reconsider later. Some people even do a trial for a year to compare – since you can switch suppliers or tariff types in Belgium fairly easily (usually with a month's notice, unless you have a contract with a specific term). So it's not a huge commitment if you find it doesn't suit your lifestyle.

4. Solar Panel Installation

Installing solar panels (photovoltaic or "PV" panels) on your roof is one of the most impactful home energy improvements you can make. It lets you generate your own clean electricity and shields you from high grid prices. In Flanders, solar has been very popular – over a million installations are out there, on everything from villas to barns to

apartment blocks. Let's break down key points for solar in the Flemish/Belgian context:

Financial benefits: When you have solar panels, every kilowatt-hour of solar electricity that you use in your home is a kilowatt-hour you don't have to buy from your supplier. Given retail electricity prices around 25-30 eurocents per kWh, those savings add up fast. If your panels produce more than you need at any moment, the excess is sent to the grid and you get credited for it (more on how that works in a bit). Conversely, at times when you need more than your panels are producing (like at night), you still draw from the grid as usual. So economically, your bill will shrink based on how much solar energy you consumed yourself plus whatever you earned from the excess you sold.

A typical home system might be, say, 12 panels of 350 W each (~4.2 kW system). This could produce on the order of 3,600–4,000 kWh per year under Belgian sun conditions. If you use a lot of that (maybe you have an electric car or electric heating or you're home during day), your grid consumption could drop dramatically. Even if you don't use all of it, you still get something for sending it out. The payback period for solar in 2025 in Flanders is usually cited around 7 to 10 years, depending on system size, self-consumption rate, and assumptions about energy prices. Considering panels often last 25+ years, it's quite worthwhile. And unlike many expenses, solar is an investment that tangibly reduces monthly costs and can increase property value (a home with a solar installation and a good EPC rating is attractive to buyers).

Net metering vs new system (injectietarief): Up until a couple of years ago, if you had solar and the old style meter, net metering

meant your meter would spin backwards when you injected power, effectively giving you full 1:1 credit (you'd only pay the difference annually, plus a fixed "prosumer fee"). That scheme is over for new installations – now with digital meters, you have **separate registers** for what you take and what you feed in. In practical terms, now you pay for all the electricity you draw at the normal rate, and any solar you feed in is paid to you at a compensation rate. This rate can vary by supplier/contract – some might offer a decent price for it (like maybe 10 cents/kWh), others might just give you the wholesale market average (which could be less). Some suppliers have special deals for solar owners, like an annual payout or a slightly higher feed-in rate if you also buy from them. It's important to choose a supplier that gives a fair compensation for your injection, since that affects your economics.

However, the new paradigm really incentivizes **using as much of your solar production directly as possible**. This is called increasing your "self-consumption". For example, if in a day your panels make 20 kWh and you manage to directly use 15 kWh (laundry, dishwashing, charging devices, maybe charging an appliance or car), and only 5 kWh goes out to grid, you're doing well. The 15 kWh saved you from buying at full price; the 5 kWh might earn you a small credit. If instead you used only 5 and exported 15, you'd save less and be at the mercy of the lower compensation for the 15. So, strategies like running appliances during sunny periods, or using any form of storage (battery, heat storage, even planning your baking/cooking when sun is up) help maximize the value of your solar.

Subsidies and incentives: Flanders used to have some generous subsidies in the early days (like big one-time grants or certificates). Those have mostly been phased out as the cost of solar came down.

Until 2021/2022 there were green energy certificates and a solar premium (which was around a few hundred euros, capped for small systems). As of 2025, for new installations, there's no direct cash subsidy from the Flemish government for standard PV systems. There are, however, supportive measures:

- **6% VAT for renovation**: If your house is older than 10 years, installing solar counts as a renovation and you pay only 6% VAT on the installation instead of 21%. This is effectively a ~12.4% cost reduction. If your house is newer, unfortunately it's 21% VAT (there was a temporary measure that allowed even new homes to get 6% for solar in 2021-2022, but that expired).
- **Net-metering transition compensation**: There was a one-time compensation for those who installed panels expecting net metering but lost it due to the court decision – it's basically an extra rebate to somewhat offset the cost of maybe adding a battery or so. If you're in that category, hopefully you applied for it; it's not for new installs now, it was for earlier adopters caught by the rule change.
- **Loans**: There are energy loans (some 0% "energy loans" for lower-income households to invest in things like solar, and low-interest loans for others). And through the renovation pact, there are possible roll-in of solar costs if doing a larger renovation with a renovation loan.
- **Municipal incentives**: Occasionally, provinces or communes do group buys or small incentives. For example, some have done group purchasing schemes where many residents sign up and get a volume discount from an installer. It's worth checking your local city or province energy desk to see if anything is running.

Also, remember solar panels boost your EPC score (they effectively reduce the “primary energy consumption” of the house). A better EPC might qualify you for certain bonuses or at least avoid that renovation obligation if you’re selling.

Technical and practical tips:

- Make sure your roof is in good shape before installing panels. If it’s an old roof that might need redoing in a few years, it’s often advised to do that first (there are combination premiums when insulating a roof and putting solar, etc.). It’s easier than having to remove and refit panels later for roof work.
- Orientation: South-facing is ideal, but east-west split arrays are also common and actually can be nice because they spread production across morning and afternoon. Even a southeast or southwest orientation is fine. North-facing wouldn’t be recommended (very low yield).
- Shading: Check if trees, chimneys, or other buildings cast shadows on the roof. Even partial shading on one panel can drag down an entire string of panels (though modern systems with microinverters or optimizers can mitigate that). If shading is an issue, those microinverters or power optimizers are worth considering; they ensure one shaded panel doesn’t spoil the output of the rest.
- Sizing: There used to be a rule of thumb to not oversize beyond your annual consumption because with net metering it didn’t matter much – now with separate metering, some people size closer to what they’ll actually use through the year. However, if you plan to

get an EV or heat pump later, you might install a bit extra panel capacity now to cover that future use. There isn't a net metering cap now; you can feed in as much as you produce and get paid the compensation for it, but the economics of oversized systems are a bit weaker since excess sold is at lower rate. There's also the inverter power limit (in Flanders residential, systems under 10 kVA are simpler in terms of paperwork and no injections fees beyond standard grid cost, etc., whereas above that gets into more complex territory with grid operator). Most homes stick to under 10 kW inverter, which is plenty (that's ~30-35 panels).

Solar maintenance and life: Panels are quite low-maintenance. Rain usually washes them off. In Belgium's climate, you generally don't need to clean them often unless you have a specific issue (like a tree dropping a lot of pollen and dust on them or something). Just a visual check once a year is fine. They degrade slightly over time (maybe losing ~0.5% efficiency per year), but after 20 years they still work well. Inverters (the device that converts DC from panels to AC for your home) typically last maybe 10-15 years, so budget a replacement or repair in that timeframe. Newer microinverters claim longer lifespans.

Combining with other tech: We already talked about batteries and EVs. Another one is **solar thermal** (for hot water). Some Belgian homes have both PV and solar thermal panels for water heating. Solar thermal can be very efficient for hot water in summer, but in winter PV might be more versatile (and you can use PV power to run a heat pump water heater). The trend nowadays is leaning towards PV + heat pump boiler rather than separate thermal panels, simply for simplicity. If you do have solar thermal, just ensure it's properly

controlled and the pump isn't running when it's not contributing (wasting electricity). But that's a side note.

Net metering in Wallonia/Brussels: Slightly different but just in case – Wallonia allowed net-metering (with an annual fee) until very recently. From 2024 onward they are transitioning to a system more like Flanders. Brussels has had a system of green certificates instead of net metering. Each region is different, so always check local policy. This guide focuses on Flanders, where it's now clear: no net metering, but decent self-consumption and smart use is the way to go.

Environmental impact and independence: By installing solar, you're generating green energy and contributing to climate goals. A typical residential system in Belgium might save on the order of 1 to 2 tonnes of CO2 per year (since it offsets grid electricity which has a mix of gas, etc.). Over its life, that's like 25+ tonnes – quite significant! It also insulates you from geopolitical issues affecting energy – once you have solar, part of your electricity is essentially at zero marginal cost, which is reassuring. Many people found in the 2021-2022 energy crisis that having solar was a huge relief as prices soared.

Usage mindset change: One thing new solar owners often experience is a change in how they use electricity. You become more aware of when your panels are producing and tend to do things accordingly. It might be as simple as "I'll run the washing machine after 11 AM when the sun is on the roof" or "I'll charge the e-bike battery during lunchtime sun rather than at night." It's a good practice to maximize your direct consumption. You might even take pride in checking a home energy app seeing that your home ran on 100% self-generated power for a period. This is a bit of behavior adaptation but can be almost fun and definitely rewarding financially.

All in all, **solar panels are one of the best investments for a home in Flanders** if you have a suitable roof. They provide clean energy, reduce bills, and are a key piece in the smart, automated home energy puzzle we're discussing. Once installed, use smart plugs, timers, or just mindful scheduling to use that solar power to the fullest. With the combination of solar + possibly a battery or smart system, some households even aim for "net-zero" electricity over a year (producing as much as they consume) – though the timing matters, which is where batteries and load shifting help. And even if you're not home much in the day, an EV or battery can soak up daytime solar and give it back at night. The future energy system in Belgium is definitely moving toward lots of distributed solar, and homes that take advantage of it will benefit the most.

5. Home Energy Storage

Home energy storage, typically in the form of a lithium-ion battery system, allows you to store electricity for later use. In a residential context, batteries are often paired with solar panels: you store surplus solar energy from the day to use in the evening or at night. But even without solar, a battery could store cheap off-peak grid electricity (if you have a dynamic tariff or a big day/night spread) and discharge during expensive periods. Let's unpack the key considerations for home batteries in Belgium:

Use cases:

- **Maximizing Solar Self-Consumption:** As mentioned, with a battery, you can capture the excess midday solar that you would otherwise send to the grid. Later when the sun's down, you draw from the

battery instead of the grid. This means you effectively get to use more of your own generated power, increasing savings because you avoid buying at the full rate. For example, on a sunny April day, your home might only need 30% of what the panels produce in real time. Without a battery, 70% goes out (for a small credit). With a battery, a chunk of that 70% can be saved and used at night, maybe bringing self-use to 80% of production.

- **Time-of-Use Arbitrage:** If you have significant price differences between times, a battery can charge when electricity is cheap (like at night or a windy low-demand period) and discharge when it's expensive (evening peak). This can reduce the cost of the power you consume. In Belgium, the day/night difference for energy might not be huge if you're on a flat contract, but on a dynamic plan the swings can be big. For instance, charge at 4 cents/kWh at night, use that electricity instead of buying at 25 cents in the evening – that saves 21 cents for each kWh shifted, which adds up if done regularly.

- **Backup Power:** Although Belgium's grid is reliable, storms or accidents can cause outages occasionally. A battery (if paired with an inverter that has backup capability) can keep your essentials running when the power goes out. You might keep the fridge, some lights, and a few outlets on backup circuits. Knowing you have a few kWh stored can give peace of mind for short blackouts (most home batteries could cover a few hours of basic needs easily). This is more important for those who might have critical electrical equipment at home (medical devices, work servers, etc.) or just don't want the hassle of outages.

- **Peak Shaving (Capacity Tariff Management):** With the introduction of capacity-based network charges in Flanders, keeping your peak

15-min power draw low can save money. A battery can help with that by kicking in when you turn on multiple devices. For example, if your car charger and induction cooktop are on simultaneously pushing you to 8 kW draw, a battery could supply a couple of kW such that only, say, 5-6 kW comes from the grid, thus capping your peak. This “peak shaving” feature is available in some smart battery systems. It effectively flattens your demand profile, which is good for minimizing the new tariff costs and also generally good for the grid.

Limitations and considerations:

- **Cost vs Benefit:** Home batteries are still fairly costly. A typical 5 kWh battery might cost around €4,000 and a 10 kWh perhaps €7,000 (very ballpark). The potential savings depend on how much of its capacity you cycle daily and the price differences. Some quick math: if you can save, say, €0.20 per kWh by using stored energy instead of grid (this is a high estimate for difference), and you cycle 5 kWh per day through the battery, that’s €1/day saved, or ~€365/year. On a €4-5k battery, that’s a long payback (~12-15 years, aligning with what estimates say). If your situation yields only €0.10 saved per kWh shifted, payback extends towards 20+ years which is likely beyond the battery’s lifespan. However, if energy prices rise or if you smartly stack uses (peak shaving + TOU + maximizing solar), you can increase the value.
- **Lifespan:** Batteries degrade with use (typically warranted for, say, 10 years or a certain number of cycles). After maybe 10 years, a battery might have, for example, 70-80% of its original capacity left. So a 10 kWh battery might effectively become a 7-8 kWh battery due to wear. This doesn’t mean it’s useless, just less

storage. When calculating payback, one should consider that the performance declines over time.

- **Capacity:** Most home batteries range between 5-15 kWh. To put that in perspective, 10 kWh could run an efficient fridge, some LED lights, a TV, and gas heating controls for quite a while (maybe a full day or more) but running an electric heater drawing 2 kW would drain it in 5 hours. So they're great for average household loads but can't cover heavy consumption for very long. They're more about shifting typical usage rather than completely off-grid autonomy (going off-grid would require much larger storage plus oversizing generation).
- **Integration:** Installing a battery in an existing solar setup is possible; many inverter manufacturers offer add-on batteries. Some systems are AC-coupled (battery with its own inverter connected to house mains) and some DC-coupled (battery tied into the solar inverter system). AC-coupled can be easier for retrofitting. One should get a professional assessment to see what fits the current system or what inverter to get if planning from scratch (some people opt for hybrid inverters when installing solar, which can directly manage a battery when added).
- **Subsidy:** As noted, Flanders had a battery subsidy which ended in 2024. During its run, it reduced costs by a chunk (I think it was up to €250 per kWh of capacity, capped at certain amount). Without it, the full cost is on the consumer now. There might still be a small federal tax deduction in 2024 (15%) for batteries but that too was set to end. Always check the latest incentive, as policies can update to encourage storage if needed. At the moment though, assume no big handouts for batteries.

- **Energy community potential:** In the future, if regulations allow more energy sharing, a home battery might also help in participating in local energy communities (like storing cheap community wind power, etc.). Not a factor yet, but interesting to keep an eye on trends.

Ideal situations for batteries:

- You have a solar PV system that often produces significantly more than your daytime consumption (common for people who work away from home in daytime). The battery will soak up that excess for use later.
- You own an EV but perhaps you can't always charge it during sunny hours – a battery could store solar and then you charge the EV in the evening from the battery (though EV batteries are huge; transferring meaningful energy would need a big home battery or multiple cycles).
- You are on a dynamic tariff or have a big peak/off-peak price gap. This volatility gives a battery more opportunities to save money.
- You experience outages occasionally and want backup. For example, some rural parts of Wallonia or even parts of Flanders might get outages during severe weather. A battery with backup capability (and an automatic transfer switch) can seamlessly keep lights on. This is a reliability/comfort feature that is hard to value in euros but can be important to some.

Operation: Modern home battery systems come with smart control apps. Usually, you can set modes:

- “Self-consumption mode”: it will charge on solar excess and discharge when solar isn’t enough, trying to minimize grid import.
- “Time-based mode”: you might input your peak/offpeak hours or dynamic rates; it will schedule charge/discharge to minimize cost (this might override pure solar priorities if, say, grid night power is cheaper than using battery for it, etc.).
- “Backup mode”: reserve some portion of battery (say 20%) for emergency in case of outage, so it never uses that portion unless grid fails.
- Many allow combinations (like self-consumption but also charge from grid at a set cheap period if you want).

Most of the time, you can just let it run in auto once configured. You might occasionally tweak if your tariff or usage pattern changes.

Capacity Tariff note: The capacity tariff counts the highest 15-min average in a month. A battery can shave peaks if it reacts quickly to spikes. Some systems measure home consumption and instantly discharge when you go above a threshold. For example, you might set: don’t let grid draw exceed 5 kW; if consumption tries to go above, battery will supply the rest. This is a neat feature to avoid one-off peaks that could otherwise set a high capacity charge. If you’re conscious, you might manually avoid peaks, but the battery provides a safety net if, say, multiple things coincidentally turn on. Note: if you have an EV charging at high power and other stuff comes on, the battery will help only as far as its inverter power allows (if battery inverter is 5 kW and EV is drawing 7 kW, it can at most cut 5 kW of

that draw). So sizing and inverter power matter for this function.

Example scenario: Imagine it's a sunny spring day. You have 5 kW of solar, a 5 kW/10 kWh battery, and moderate home load. Morning: 7 AM, battery had been used overnight and is maybe 20% (2 kWh) left by sunrise. 8-9 AM, everyone leaves the house, some sun is up but not much demand at home, so solar starts charging the battery. By noon, battery might be full (10 kWh) because not many appliances were on. Afternoon, solar still produces, excess goes to grid once battery full. Come evening, 6 PM, sun goes down, now instead of drawing from grid, the house draws from the battery. You cook, watch TV – maybe consumption is 3 kW at times. The battery handles that until it's drained. Let's say by 11 PM, the battery is empty after covering the evening. Then at night you're on grid for some hours (fridge, etc.). Overall, you might have imported almost nothing during peak daytime/evening hours – the grid usage occurred only at night when it's cheaper. That day, the solar energy you generated was almost entirely self-utilized either immediately or via the battery. This maximizes your savings.

Now add dynamic pricing to this scenario: the system might choose to not discharge the battery fully at 6-7 PM if it sees that prices are not super high then but expected to be higher at 7-8 PM; it will time discharging to when prices hit the top. Or if there's a very cheap period at say 3 AM (windy night), it could even draw a bit from grid to charge the battery if it wasn't filled by solar, ensuring you have cheap energy stored for breakfast time peak. These are the kind of smart behaviors possible.

Conclusion on batteries: They are a powerful tool for energy management with the caveat of current cost. If budget isn't an issue

and you value independence, they're fantastic. If you're more ROI-driven, you have to analyze your use case carefully to see if it justifies itself. Many early adopters in Flanders grabbed them with the subsidy; now without it, adoption might slow a bit until prices fall further. But with time, as more second-life EV batteries become available and manufacturing scales up, we expect home storage to become more affordable. Also, if grid tariffs evolve to heavily penalize peak or if more dynamic elements come in, the value proposition could improve.

For now, if you do get a battery, integrate it with your whole home strategy: combine it with solar PV, use smart controls, consider your tariff, and aim to squeeze the most benefit (bill savings, backup, etc.) out of it. It's pretty satisfying to see your home powered by stored sunshine at night or sailing through a blackout with lights on thanks to your battery. It's a glimpse of the future of decentralized energy.

6. Smart Home Automation

Smart home automation is like giving your home a brain that can optimize energy use for you. By deploying smart devices (thermostats, sensors, plugs, etc.), you can ensure energy is used only when and where it's needed, and often at the best times. We already touched on some specific examples, but let's overview how automation helps and some concrete cases relevant to Belgian households:

Heating and cooling automation: In Belgium, heating is paramount. A **smart thermostat** connected to your boiler or heat pump can learn your daily routine. For example, it will know on weekdays you leave by

8 AM, so it can lower the heating at 7:30 (no point blasting heat when you're about to leave) and maybe kick back on half an hour before you usually return, so you come home to warmth without having heated an empty house all day. It also often uses sensors or your phone's location to detect if you left unexpectedly, and can go into away mode. Smart thermostats can also integrate weather forecasts – if tomorrow is going to be warmer, they might adjust heating to avoid overshooting. In a Belgian context, many people have a single thermostat controlling the whole house (often in the living room), but bedrooms might be overheated as a result or certain rooms under-heated. One solution is **smart radiator valves** (SRVs) on each radiator. These are little motorized valve heads that can be programmed or remotely controlled. They allow room-by-room scheduling. For instance, keep bedroom radiators off during the day and only let them heat up before bedtime; keep the bathroom toasty in the morning but off the rest of the day, etc. This kind of zone control can save a lot since you're not heating rooms that don't need it at certain times. It's very applicable in the many brick homes and flats of Flanders where central heating has traditionally been one zone. Companies like Tado and Honeywell offer such multi-room systems. They can be retrofitted easily (just replace the valve heads, no plumbing needed). It's both energy-saving and improves comfort (no more fighting over one thermostat setting for the whole house).

For those with air conditioning (not super common except perhaps portable units or some recent installs), smart AC controllers exist too. They can turn AC units on/off based on schedules or even on your approach (via GPS geofencing). So if a heatwave hits and you have a bedroom AC, you could have it turn on an hour before you get home to cool the place, then turn off at 3 AM after you're asleep, for example. This avoids leaving AC running all day.

Lighting and appliance automation: Motion sensors can tie into lights so that hallways, toilets, garages, etc., only light up when someone's there. In a home, the energy saving from this might not be massive in absolute terms (especially if LED lights), but it is convenience and avoids wastage. Where it really helps is if you have forgetful members in the house – the system will ensure lights turn off after X minutes of no motion. Likewise, smart plugs on things like the iron (auto off if you ever accidentally leave it on), or on the coffee machine (so it doesn't stay warming plate on for hours) can both save energy and add safety.

You can also create **scenes/routines**. At night when you hit "Good Night" on a smart home scene, it could turn off all lights, lower heating, maybe turn off certain plugs (TV, PC equipment), and arm security. In the morning, a routine could raise the thermostat a bit, turn on the kitchen outlet (so the electric kettle's power is ready), etc. These all ensure devices aren't left running unnecessarily.

Optimizing based on electricity prices: In Belgium, with the advent of smart meters and possibly dynamic pricing, a really cool aspect of automation is automatically timing certain loads. For example, you could have a smart plug on your electric water heater or on an electric towel rail heater in the bathroom. Through integration with a price API, it could ensure the heater only runs during the cheapest 2 hours of the night, enough to heat water or warm towels, and stays off during expensive hours. Many appliances like dishwashers and washing machines have delay start timers built-in; you can use those to start them at night if you have a night tariff. But going further, there are devices that can actually start/stop appliances for you (there are even smart plugs that can detect when a washing machine cycle is

finished by power usage pattern and then cut power, or start one by simulating a button press via an IR blaster or smart relay – though that's more advanced DIY territory).

With **smart EV chargers**, as we covered, they directly use automation to charge at optimal times. It's a prime example of automation yielding savings: you just plug in your car when you get home, and the charger's brain does the rest, maybe only actually charging after midnight when it's cheapest, and finishing by morning.

Occupancy sensing and climate: Some thermostats come with remote wireless temperature sensors or occupancy sensors for different rooms. Say your living room is warm because of sunshine, the thermostat can notice bedrooms are still cold and adjust or vice versa. Or if nobody is detected in the house (no motion and your phones are away), it can drop heating even if schedule said it would be on. These fine-grained adjustments trim wasted heating and also adapt to irregular schedules (work from home days vs office days, etc.).

Smart blinds/shades: Another automation aspect is controlling blinds or shutters based on time or sun. Closing shutters at sunset in winter can be automated – ensuring you always get that insulating benefit even if you're not home or forget. Similarly, in summer, you could automate blinds to close during peak sun to reduce cooling needs. These require motorized blinds, which not everyone has, but some have motorized rolling shutters in Belgian homes – they often already put them on a timer for security/comfort. New systems can even do it via light sensors or temperature sensors in the room.

Energy monitoring: Devices like Smappee, Youless, etc., can connect

to the meter or measure at the fuse box and give real-time data. With those, some people set up alerts or automations. For example, if consumption goes above X kW, maybe turn off the EV charger or AC (peak management). Or a simpler one: if the dryer finished (they often have a different sound or the power usage drops to idle), send a notification or turn a light a different color. It sounds trivial, but knowing exactly when an appliance is done helps you avoid it running longer than needed or lets you promptly hang clothes, etc.

Concrete Belgian household example scenario:
Imagine a family in a typical Flemish house:

- They install a smart thermostat and smart radiator valves. Now, weekdays, the system lowers heating at 8:30 when everyone's out, and only keeps maybe a bit of heat in a home office where one person returns early. By 5:30 pm, it warms up living areas for when everyone is back. Bedrooms are kept cooler except 7-9 am and 9-10 pm when they are used. They no longer accidentally leave the heating on full when going to grandma's on Sunday because the system detects no one home and temp drops automatically.
- They have some smart plugs: the TV and game console setup in the den turns completely off at 11 pm to cut standby draw overnight. The pump of the aquarium or a decorative fountain in the garden might be on a timer via smart plug, no need to run 24/7. The coffee machine gets shut off after the morning rush instead of being left on until noon.
- Motion sensors in the hallway and WC control the lights there, so kids not turning lights off is no longer an issue – lights auto-off after 5 minutes of no motion.

- An outdoor smart plug controlling the patio heaters ensures they can’t accidentally be left on; maybe they auto turn off after 30 minutes unless someone explicitly turns them back on.
- They have an electric water heater that’s on a smart switch with an energy tariff integration. It heats water during the cheapest hours around mid-morning (when solar might also be contributing if they have PV) and doesn’t heat during the 6-9 pm window when power is expensive. They still have enough hot water because the tank stores it.
- Because they have a digital meter with capacity tariff, they set an automation that if the EV is charging and someone starts using the induction cooktop + oven, the charger automatically throttles down to avoid a huge combined draw. Once cooking is done, the charger goes back up. All this without them noticing anything aside from maybe a slightly slower car charge on evenings when they cook a big meal.
- They also integrated a weather forecast API with their smart home: on a very cold night ahead, the system pre-heats the living room a bit more before the peak price time in early evening to coast through without needing to turn on the boiler at the priciest hour; on a bright day forecast, it may keep heat lower in the morning knowing the sun will warm the house through windows by noon.

This all sounds complex, but with modern consumer-friendly systems (like Home Assistant for DIY enthusiasts, or proprietary ecosystems like Google Nest, Apple HomeKit, etc.), a lot can be done relatively simply through apps and controllers.

Value proposition: The value is multi-fold: actual euro savings from lower energy usage and shifted usage, improved comfort and convenience (things happen automatically, you worry less about forgetting something on), and even potential longevity increase of appliances (since they're not running unnecessarily or are properly cycled). It can also bolster home security – lights turning on/off can deter burglars, smart sensors can alert you of issues (like a water leak sensor or an alert if an appliance draws power at an odd time indicating a malfunction, etc.).

For many Belgian homes, the first step into automation is a smart thermostat – that typically yields noticeable gas savings (around 10% is often cited). Then perhaps smart plugs or lighting as a second step – yields maybe a few percent off electric usage plus convenience. Then integrating EV charging or other large systems would be the bigger chunk if applicable.

It's important to set things up correctly so that automation doesn't become annoyance. (You don't want lights turning off while you're still in the room just because you sat too still, or heating not coming on when needed because it thought you were away – initial calibration and maybe a manual override button is good in such cases.) But matured products nowadays have minimized those issues with better sensors and learning algorithms.

In essence, a **smart home automatically "hunts" for energy savings opportunities** that a human might not consistently manage. Humans might forget to lower the thermostat or turn something off; the smart home won't forget. Humans might not track the fluctuating electricity prices 24/7; the smart system can and act on it. That's why

automation is a powerful ally in efficiency. And it doesn't have to be one expensive central system – you can start with a couple of smart plugs and a thermostat and expand gradually. Many devices nowadays are wireless and modular.

Belgium specifically, with its new digital meters, is at a point where households can really take advantage of these technologies. The digital meter data can be plugged into these smart systems, enabling advanced strategies like reacting to grid load or using real-time solar production data. We're heading into a time where your home can be both a small power plant (with solar) and a smart energy manager (with automation) – saving you money and contributing to a more stable and green grid for everyone.

7. Additional Relevant Topics

This section covers a grab-bag of additional factors that influence home energy usage and efficiency in Belgium:

- **Phantom Loads:** These are the standby or idle electricity uses in your home that often go unnoticed. Belgian homes, like others, have plenty of electronics that aren't truly "off" unless unplugged. Think internet modems/routers (which you usually leave on all the time), TV decoders, DVD/Blu-ray players, game consoles, microwaves with a clock display, hi-fi systems on standby, chargers that are plugged in without charging anything, etc. Each might only draw a few watts, but together they can be significant. For example, you might find your home has a constant base load of 100 W even at 3 AM when nothing is "in use" – over a year, that base load alone accounts for nearly 876 kWh (which could be €250-300). Reducing phantom load could be as simple as using switchable power strips

or smart plugs to cut power to devices overnight or when you're away. Some newer devices have eco-standby modes (like consoles that can truly sleep) – use those settings if available. If you have multiple set-top boxes and maybe you don't need one of them on standby always (maybe unplug the one in the guest room until needed), do that. It's a rather invisible area of savings because nothing changes in your lifestyle except you stop feeding electricity to devices doing nothing.

- **Typical Heating Systems & Efficiency:** The majority of Flemish homes heat with gas central heating (condensing boilers). To ensure efficiency, maintain that boiler – annual servicing not only is often legally required for fuel oil but recommended for gas too, as it keeps it running efficiently and safely. Bleed your radiators yearly to remove air (air in radiators makes heating less effective). Check that pipe insulation is in place on heating pipes in cold areas (like cellar or garage) so you're not losing heat where you don't need it. For those with older boilers (20+ years), consider upgrading; new ones can modulate and have efficiencies in the high 90s%. If you have individual electric heaters (like those little electric radiators), use them sparingly – they are expensive to run. Better to use the central heating if you have one, or if needed, only heat one room with an electric unit and keep the rest of the house cooler.

Heat pumps are on the rise due to decarbonization efforts. If you have or get one, realize that they work a bit differently – they are most efficient when run steadily at moderate power, rather than on/off like a boiler. So a smart thermostat approach is slightly different; often you want smaller set-back at night (not too cold) because recovering from a big drop with a heat pump can be less efficient.

But many modern heat pump systems come with their own smart controls and weather compensation, so they manage themselves pretty well.

- **Belgian Climate & Daylight:** We've already covered how winter is heating-intensive and summer is mild with long days. One additional point: humidity is often high in winter (damp cold), so good ventilation is important to avoid mold when a house is kept very airtight for warmth. Use extractor fans when cooking or showering, and consider a controlled ventilation system (like system C or D, which many newer homes have) to ensure air quality without excessive heat loss.

In summer, during heat waves (which do happen occasionally now), to keep cool without AC: close blinds/curtains during direct sun, ventilate at night by opening windows if it's secure to do so (night air in Belgium is usually much cooler than the day, even during a heat wave). Fans can make you feel cooler at a fraction of the energy of AC. If you do get AC, using it in moderation and only when needed (and with closed doors/windows) is best.

- **Digital Meter (Smart Meter):** The "digitale meter" is a big upgrade in how you can interact with your energy usage. You can request access to your data easily and see, for example, that your home at 2 PM is using X kW. This can highlight anomalies (e.g., you forgot the electric heater on in the garage, you see a high draw in the graph and investigate). The meter also enables participation in future smart programs. For instance, in some places, there are demand response programs where if you allow, certain appliances can be temporarily throttled at peak times by the utility for a credit

– not mainstream yet in BE for residential, but the infrastructure is now there. The digital meter also simplifies getting solar PV or switching suppliers (no more manual meter reads, and changes can happen quicker). For savings, a key is to actually look at your usage patterns. It's like tracking your spending with a budgeting app – once you see it clearly, you can often find waste to cut. The meter's accompanying apps or third-party apps can break down your daily or hourly consumption and sometimes compare to typical averages, motivating you to hit targets.

One specific digital meter feature: it can allow **net metering on a quarter-hourly basis** for dynamic contracts. What that means is, if you have solar and a dynamic contract, in each 15-minute chunk, any solar you produce first offsets consumption in that same chunk at the full value (because basically your meter will net it out before billing that interval). Only surplus is sold (at market) and only deficit is bought (at market). So if you align usage with production finely, you still effectively "net" that out at retail value. Automation helps here too – run dishwasher exactly when solar is active, etc. The meter is just the enabler.

- **EPC Ratings:** Many homeowners don't think about EPC except when selling, but it's actually a useful indicator for yourself. If your home is an E or F, you likely have lots of room for improvement (and indeed may be compelled to improve if you ever move). The EPC report lists recommendations in order of impact. It might say "Roof insulation: high" or "Single glazing -> double glazing recommended" or "Install solar water heater". These recommendations can guide your renovation investment. Upgrading insulation and windows not only improves the label but can

massively reduce heating needs. Belgium offers various premiums: for example, insulating your roof can get you a subsidy per square meter, etc. Upgrading from single to double (or double to modern high-performance triple) glazing can eliminate drafts and keep heat in. It's often said that the cheapest energy is the energy you don't need – so before fancy tech like heat pumps or solar, make sure the house isn't leaking heat unnecessarily. That means: roof, walls (if cavity walls, get them filled; if solid walls, consider interior or exterior insulation during a remodel), windows, floor (maybe less priority but if you have a crawlspace, you can insulate under the floor).

Flanders even introduced a sort of "renovation passport" or building passport concept for long-term planning of these improvements. And with the goal of average label A by 2050, there's likely to be more and more encouragement to retrofit. So raising your EPC not only saves energy costs but future-proofs your home for regulations and market value. An efficient home also pairs better with technologies like heat pumps (because once demand is low, a smaller heat pump can handle it, etc.). If you ever rent out a property, note that renters are increasingly aware of EPC too since energy bills fall on them – a better EPC can make it easier to rent and allow perhaps a better rent price.

In summary, think of **EPC as a roadmap**: Aim to move from whatever your label is to a better one by tackling the items listed. Some quick wins might be: LED lighting (small bump but in calculation it helps), improving heating system efficiency, adding some insulation.

Deeper retrofits yield bigger jumps. A label E to C jump might come from insulating roof + new boiler + double glazing, for instance.

By considering these additional topics, you wrap around the holistic picture of home energy efficiency. It’s not just about one gadget or one habit, but the combination of a well-insulated, well-equipped home, running on smart schedules, possibly generating its own renewable energy, and minimizing any waste – whether it’s wasted heat, wasted electricity in standby, or wasted money by not taking advantage of better pricing. Belgian homes vary widely (from old 1930s houses to modern apartments), but the principles apply across the board: reduce losses, improve efficiency of systems, and intelligently control energy use. With those in place, you’ll be set to enjoy a comfortable home with manageable energy bills and a smaller carbon footprint, which is a win-win-win for you, your wallet, and the planet.