RISE

THE STARTER GUIDE

TO A SUSTAINABLE HOME

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SUSTAINABLE

adjective conserving an ecological balance by avoiding depletion of natural resources.“our fundamental commitment to sustainable development”.

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CHAPTER 1

Location

Where you choose to live makes a big difference in your overall impact and cost. If your location is already set, then you just work with it. If you are choosing a new location, consider these factors:

COUNTRY VS. CITY

A place in the country has great appeal, especially with children, so they can run around in nature. And having some land gives you the opportunity to plant a garden and grow some of your food if you are into that. Gardening increases your quality of life, and reduces the environmental impact of shipping in food.

The disadvantage of country living is the distance and access to services. Your travel time, footprint, and cost will be larger because the places you need to go will be farther away,and public transit is unlikely to be available.

Living in an urban area like a city or even a small town brings you closer access to services and people, reducing your travel time, cost, and risk of isolation. If you live in a place where at least some of your important daily destinations – work, school, friends, sports, library, medical care, etc.- are close enough to bike or walk,you'll have a smaller travel footprint and cost.

SUGGESTED ARTICLES

Why Location Matters to the Sustainability of Your Home 6 min read
Sustainability Considerations When Shopping for Your Home 5 min read

BIG VS SMALL

How much space do you want? Everything from a vast mansion to a tiny house may be touted as sustainable, but what really is the best choice for you? Generally, the less built space per person, the lower the environmental impact (and cost) per person will be. This is one reason the tiny house movement has such popularity today.

The key words here are ‘per person’. If you took a hundred tiny houses and stuck them together,you would have an apartment building. And the apartment building would win for sustainability,because being clustered together saves a ton (well, actually many tonnes) on exterior finished wall space, mechanical systems, heating energy,and land.

SUGGESTED ARTICLES

The Impact of Home Size on Sustainability 🕓 4 min read
How Much Square Footage Do You Need? 🕓 5 min read

Detached vs. Shared

As the apartment building example shows, sharing walls, as in duplexes, townhouses, condos, or apartments, reduces impact and cost.

If designed well for social interaction, common spaces like a shared garden or workshop space can also increase happiness and social resilience by encouraging people to get to know each other and call on each other for help. Borrowing tools or some eggs from each other is a real sign of a healthy community.

A lot of apartment buildings don’t foster this kind of networking simply because they don’t often have inspiring natural social spaces. Developers of co-housing communities like Vancouver Co-housing are fixing that by including beautiful common spaces in their developments.

You can create a do-it-yourself shared community by going in together with friends or family members on buying a duplex, triplex, or fourplex to live in.

SUGGESTED ARTICLE

Could Your Next Home be an ADU? 🕓 6 min read

Existing vs. New Build

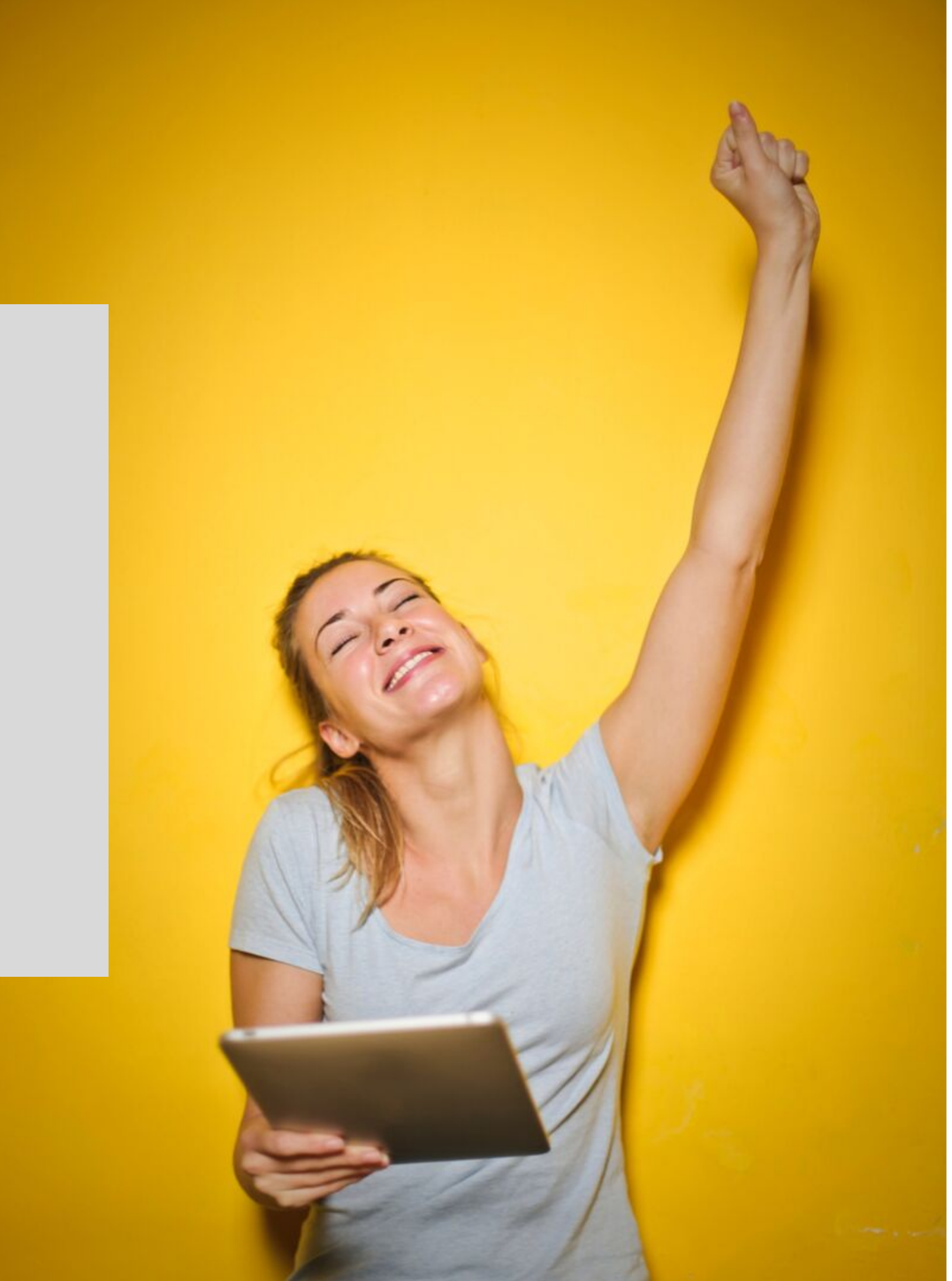
If you can make use of an existing building, you can preserve the existing built environment and prevent literally tonnes of building material from becoming waste. On the other hand, creating a new building gives you an opportunity to more easily design for energy efficiency.

A term worth knowing is ‘embodied energy’.That’s all the energy it took to make the building materials that are in your home. Embodied energy has a cost, both to your pocketbook and to the environment.

Using an existing building saves boatloads of embodied energy. On the flip side, operational energy, which is the energy it takes to heat,cool, and run the place, adds up to more than the embodied energy over the long lifetime of a building, so good energy performance is important. From an ecological perspective,using an existing building and giving it a major renovation and insulation upgrade can be the best environmental choice.

SUGGESTED ARTICLES

5 Pro Tips to Renovating an Older Home 🕓 7 min read
Tear Down or Renovate? A Look at the Numbers 🕓 4 min read
Thinking of Renovating? Read This First. 🕓 5 min read



Solar Energy Access

Whether you’re renovating or building new, in the country or the city, access to sunlight at your site gives you a big advantage.

In cold-climate places in the northern hemisphere, like northern Europe, Canada, and the northern USA, an ideal site for a solar home would be a gradual south-facing slope with a clearing south of the house and trees to the north (to protect from wind).

In the southern hemisphere, switch the directions.If you don’t have an ideal site, you can work with what you have, you’ll just need more insulation.

SUGGESTED ARTICLES

5 Solar-Powered Products to Cut Back Your Home's Energy Use 7 min read
Landscaping for Energy Reduction 4 min read
How to Make Sure Your Home is Solar Ready 5 min read

CHAPTER 2

Design

Some basic principles of solar home design go a long way to making a home more sustainable from an energy and climate change perspective. The two most important principles are:

Use The Sun

Solar home design is like making your whole house into a winter solar collector. Face one side of the building in the direction that gets the most sun in winter - south if you are in the northern hemisphere, or north if you are in the southern hemisphere.

Place most of the window area on that sunny side, to gain winter heating energy from the sun. Have only a modest area of windows facing east and west, because windows in these directions, especially the west, can cause overheating in summer. And put as few windows as possible on the shady side, because those only lose heat in winter.

We can’t stress enough the value of thick, effective insulation. Insulation is the best deal on the block. It’s there, quietly doing its job, with little or no maintenance for the life of the building.

SUGGESTED ARTICLE

Passive Solar Design 🕓 3 min read

MATERIALS

A wide variety of materials are used to make a house, like the structure (wood, steel, etc...), the building envelope (windows, insulation, siding, etc...), interior finishes (flooring, trim, cabinets, etc...) and the foundation. The materials have an effect on indoor air quality, durability, and environmental footprint. Choosing healthy materials is a matter of asking the right questions:

- Where does it come from?
- What is it made of?
- Are the components healthy and environmentally sound?
- How much energy does it take to make it?
- How long will it last?
- Is it free of volatile organic compounds (VOCs) that could off-gas and harm indoor
- air quality?
- What happens to the material after its useful life?
- Can it be returned to the earth, or recycled into a new and useful product?

The answers to these questions vary, and sometimes you need to make a judgement call.

For example, consider three types of siding: brick, wood and vinyl.

Brick may have the highest embodied energy (takes lots of energy to make it), but, it should also last longer than wood or vinyl.

Meanwhile, wood is a positive because it can be made from local, renewable resources, and low energy, but it won't last as long and may need to be painted several times during its life cycle.

You just make the most informed choice you can, based on your values and preferences, and ask lots of questions.

SUGGESTED ARTICLES

How to Discern Green from Green-washed 5 min read
Repurposing Construction Waste 7 min read
Formaldehyde Hotspots in the Home 5 min read

From an environmental perspective, the top five energy sources are:

The energy you don’t use! – Save energy with good design, conservation, and efficiency.

Solar energy – Passive solar energy, solar thermal energy, solar electricity.

Wind energy – But wind energy is easier to do at larger scale than a single home. If you want to use wind energy, you are better off buying shares in a wind farm or choosing a ‘green electricity’ provider.

Water power (hydroelectricity) – Hydroelectricity can be purchased from electric utilities that produce it. Few homes have water power available on site, because you need a stream that falls through a steep slope, and permission to divert water from the stream.

Wood and other biomass – Within the limits of sustainable harvesting in your area, wood can be a good sustainable heat source, especially if you know a local supplier or if you have access to cut or fallen trees.

ENERGY

You use it to heat and cool your house, run all its systems and appliances, and travel to and from home, and it can add up to be your biggest cost and environmental impact over time. By reducing that energy burden, and supplying the energy from clean, renewable sources, you can dramatically cut your costs and your ecological footprint.

Making sustainable energy choices contributes to slowing down climate change. You can do that by switching away from fossil fuels – oil, gasoline, natural gas, and propane - to energy efficiency and renewable energy. The best part is, the fossil fuels you don’t use are the ones you don’t have to pay for.

Coal is also a fossil fuel, and though not many people burn coal at home nowadays, it is still used in some places to generate electricity in coal-fired power plants. You can reduce overall coal consumption and greenhouse gas emissions to the atmosphere if you reduce the amount of coal-fired electricity you use.

SUGGESTED ARTICLES

Everything You Need to Know About Going Solar 🕓 7 min read
Solar & Wind Energy Systems for the Sustainable Home 🕓 6 min read
Solar Basics: Grid-tied 🕓 8 min read

Water

Water is an essential to our lives; we use it for cooking, drinking, and washing. Reducing water consumption reduces the amount of energy and chemicals required for water and wastewater treatment, transportation through the distribution network, and water heating for showers and dishwashing.

If you live in the country and have good, plentiful well water, then conserving water may be less of a priority. But conserving hot water is still a good deal, because heating water takes a lot of energy due its high heat capacity.

It is easier than ever to reduce water consumption by using low-flow faucet aerators and showerheads and Energy Star dishwashers and clothes washers. You can also simply adjust how much water you use day-to-day by taking shorter showers or not filling the sink entirely when washing dishes.

SUGGESTED ARTICLES

Water Filtration System for Your Home 5 min read
Water-Smart Landscapes 5 min read
How to Shower in Money with this Showerhead Guide [Infographic] 7 min read

AIR

As we improve our homes to become more energy efficient, we are also introducing new building materials into our living space and making our buildings more airtight.

To maintain a positive atmosphere for good health, we must pay attention to indoor air quality. You don't want to subject yourself or your family to mould/mildew in damp basements or humid houses, or to chemicals associated with new furniture, cabinetry, wall finishes, or carpets.

The best first step is to prevent indoor air pollution. This is done by carefully designing the building as a system so moisture does not condense in places where it could promote mould growth, and by choosing healthy materials.

Low or no-VOC paints and finishes, and surfaces like wood or tile that are easy to clean, are helpful for better air quality.

In an airtight home, even with well-chosen materials, the ventilation system is important. The most common system used to supply fresh air is a heat recovery ventilator (HRV) or energy recovery ventilator (ERV). HRVs or ERVs serve the same function: to provide fresh air while saving energy.

In older homes with high humidity and risk of mould, a dehumidifier can help control moisture problems.

It's always better, if possible, to prevent moisture entry or increase ventilation than to run a dehumidifier, because they take a lot of energy to run.

SUGGESTED ARTICLES

Air Purifying Plants for Indoors 5 min read
How's your home's indoor air quality? 3 min read
Pet Allergies? Keep Your Indoor Air Quality Healthy 5 min read

CONCLUSION

When selecting, building, or renovating a home, you have a lot of choices to make - about location, design, materials, energy systems, finishes, and many other elements. You can treat those choices as an opportunity to make your home an expression of your values. Choosing environmentally sound designs and products feels good, and saves you money in the long run.

SUGGESTED ARTICLE

The Misconceptions About the Affordability of Sustainable Homes That No One Will Ever Tell You 🕙 3 min read