

# HAMMARBY SJÖSTAD 2.0

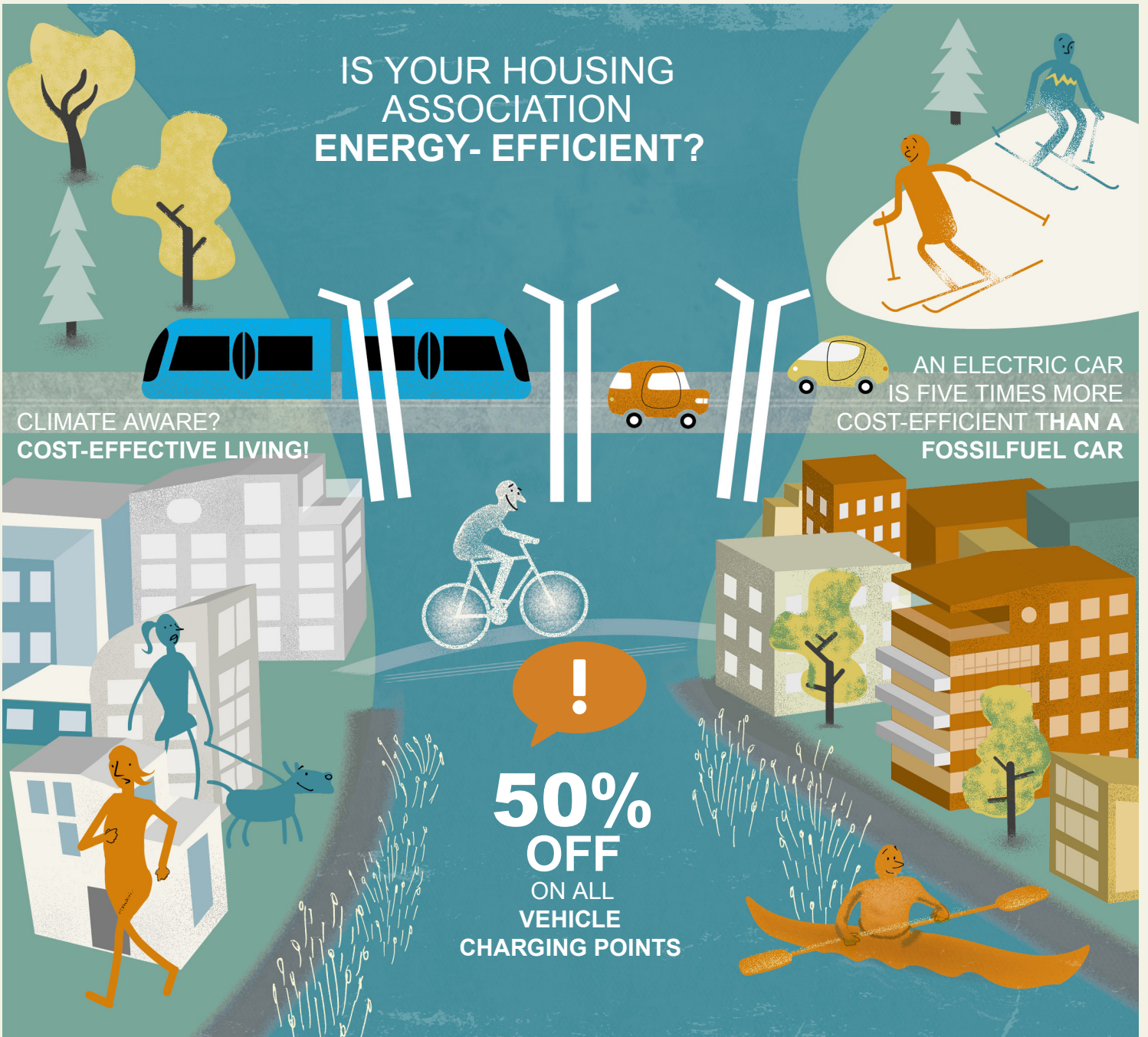
IS YOUR HOUSING  
ASSOCIATION  
ENERGY-EFFICIENT?

CLIMATE AWARE?  
COST-EFFECTIVE LIVING!

AN ELECTRIC CAR  
IS FIVE TIMES MORE  
COST-EFFECTIVE THAN A  
FOSSILFUEL CAR

!

**50%  
OFF**  
ON ALL  
VEHICLE  
CHARGING POINTS





ALLAN'S KITCHEN TABLE

It is 2011 and ten very enthusiastic residents of Hammarby Sjöstad are sitting around my kitchen table. All of us agree that our borough has failed to live up to the ambitious environmental goals that were set when it was initially built.

Questions were asked: How can we renew a new city? What can be done to ensure that Hammarby Sjöstad becomes more climate-smart and sustainable? Discussions included a more efficient use of energy in our buildings and a transition to electric vehicles while showcasing how a 'green economy approach' could influence future urban developments. Following the creation of ElectriCITY, we teamed up with some 30 innovative companies and research organizations to formulate a way forward.

Together with our local housing associations and Sjöstadsföreningen (The Hammarby Sjöstad Association) we are turning words into actions by

installing charging points for electric vehicles in all of our underground car parks, optimizing and making investments in existing energy systems, developing renewable energy sources, implementing environmental upgrades for waste disposal vehicles, introducing a shared economy approach to create a better place to live and improving recycling practices.

Can Hammarby Sjöstad be a forerunner in Stockholm's ambitious plans and reach the environmental goals as early as 2030, while at the same time inspiring other boroughs to follow suit? I think so. We have some 30-plus ongoing initiatives within our project Hammarby Sjöstad 2.0. This journal describes two of them – Energy at Home and Charge at Home. Both are very important and we have already made significant inroads. May you be inspired!

Allan Larsson, the Founder of ElectriCITY



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The Hammarby Model

When construction of Hammarby Sjöstad began at the end of the 1990's environmental goals were ambitious. It was to be a modern suburb built using the latest technology. Residential and commercial energy consumption should be low, people would choose public transport rather than cars, garbage would be used to produce district heating and food

waste would be turned into biogas for cooking and fuel for vehicles. "It will be twice as good when it comes to sustainability in comparison to other urban development!", declared politicians at the time. The Hammarby Model is a natural cycle approach to urban living still inspires hundreds of foreign delegations to visit Sjöstaden each year.





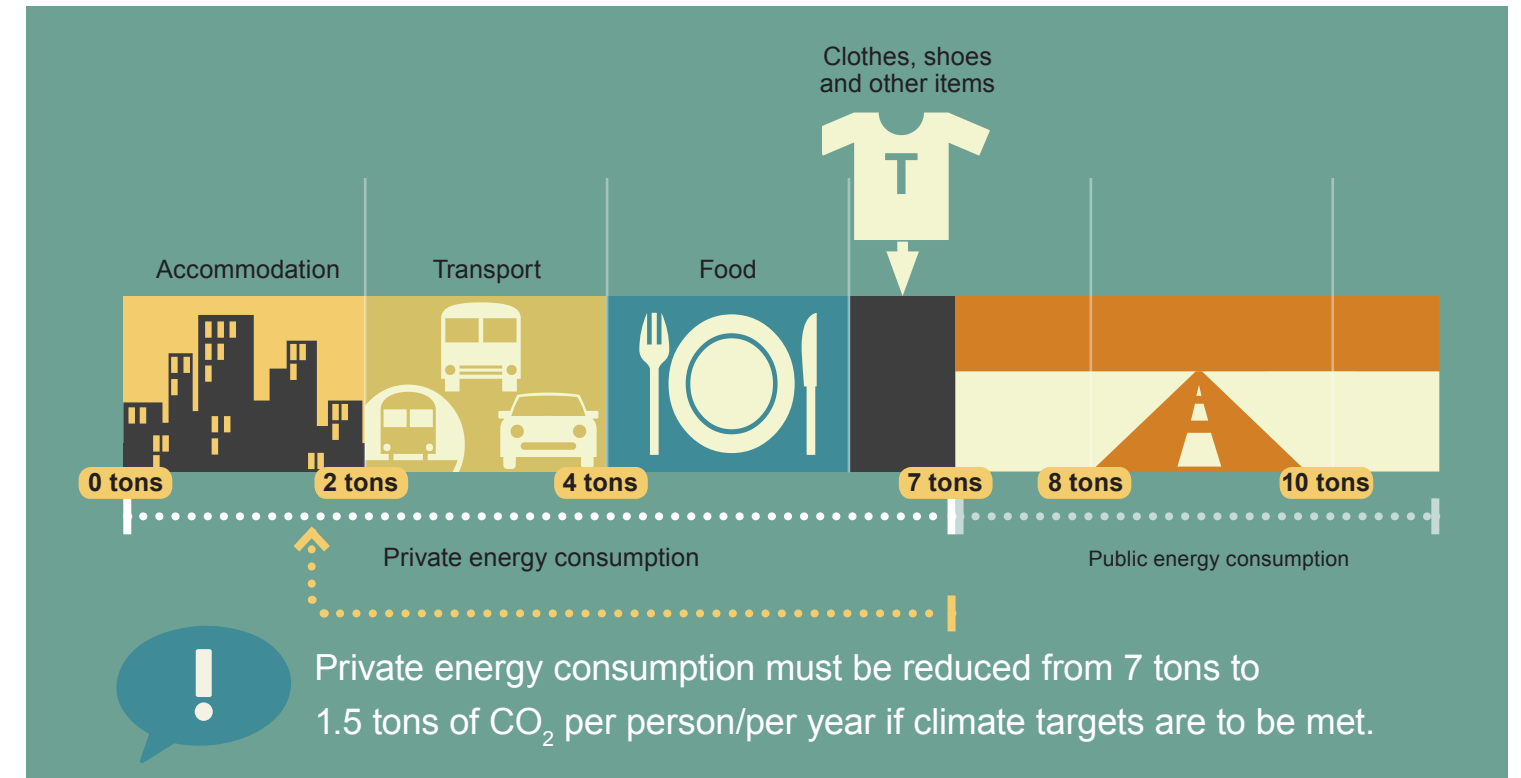


## HAMMARBY SJÖSTAD 2.0

It is fair to say that not all of the climate targets that were originally set have been reached. Most of the buildings in Sjöstaden consume more energy than was originally envisaged and many suffer from a lack of technical maintenance. Unfortunately, this is nothing unique in city developments today.

In 2012, we founded a citizen's initiative called Hammarby Sjöstad 2.0 as a part of the ElectriCITY framework in close collaboration with Sjöstadsföreningen. Our home and our shared arena is Hammarby Sjöstad and our vision is to ensure that climate goals are reached by applying new and innovative ideas, taking firm action and through pure hard work.

We are driven by a legacy destined to be handed on to our children and grandchildren – a realistic standard which defines how housing associations and property owners can be climate aware while at the same time maintaining profitability.



# Climate goals

With the ratification of the Paris Agreement in December 2015, signatories decided that global warming should stay below 2° C and preferably be no more than 1.5° C in a resolution that set a target date of 2050. The Swedish Parliament subsequently adopted its own long-term climate goals which meant that net greenhouse gas emissions in Sweden will end by 2045.

Stockholm's climate goals stretch as far as 2040 and if they are to be met it is essential that there is a borough which takes the lead. Hammarby Sjöstad 2.0 is therefore aiming to reach the city's climate target by 2030 and together with the Royal Institute of Technology (KTH) we are currently defining which measures are required. It is already clear that energy efficiency enhancements, investments in renewable energy sources and an increase in the number of charging points for electric vehicles means that we are well on the way to achieve our aims.

PHOTO: NASA/SDO



REDUCED RUNNING COSTS

As a member of a housing association you do not own your apartment, but rather buy the right to live there in a so-called condominium tenancy agreement. However, together with your neighbors you do own the building in which it is situated and are responsible for its management which entails significant obligations.



On average,

30

housing associations  
go bankrupt annually.

It is therefore important that housing association board members are active in their roles. One of the most critical issues, in addition to securing low-interest loans, is day-to-day management of the property. In a rented accommodation this is usually the responsibility of an assigned property manager, but in a housing association liability rests with the board.

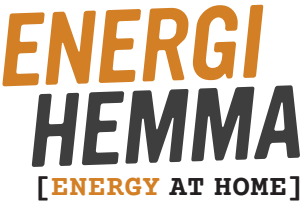
For example, in the Hammarby Strand Housing Association, overheads account for around 85% of outlay – for heat, electricity and maintenance – while 15% goes to pay interest on any mortgages that are incumbent to the property\*.



INTEREST

OPERATION  
& MAINTENANCE

*\* Based on current maintenance plans and operating costs spread over 100 years, an estimated annual interest rate of 2% (repayment of borrowed capital not included), which is equivalent to SEK 1 million per year.*



ENERGY AT HOME

One of our initiatives is called Energy at Home. The concept is based on practical work that enables us to increase our knowledge of the our energy systems, fix problems that may arise, encourage money-saving investments and reduce energy costs.



ENERGY MANAGER

Most of the housing associations in Hammarby Sjöstad have a specially appointed energy manager who compiles and then submits power efficiency assessments and recommendations to the board. This means that lower operating costs can be attained which increases the market value of the property. It may even reduce fees for association members. If your board does not have an energy manager, you should raise the issue at the next AGM.

Energy manager Carl-Gustav “Charlie” Sjömark has cut costs by around SEK 1.000.000 per year for the residents of Sjöstaden 1 through energy savings.



A motion to appoint an energy manager

I propose that we appoint an energy manager to the board of our housing association. A person who is responsible for energy supply and, in consultation with the Board, works to optimize and lower the association's energy usage and associated costs.

A large part of our overheads are the result of our energy consumption. Modern technology makes it possible to significantly reduce this and improve our association's overall financial standing. It also means that we can reduce our carbon footprint and emissions of CO<sub>2</sub>.

The Energy Manager:

- Establish an energy map for the property together with Sjöstadsföreningen/ElectricITY
- Set energy consumption reduction goals
- Inform the Board about suitable methods available for improving energy efficiency
- Keep the Board updated about technologies that can recover building-generated waste heat
- Advise the Board about renewable energy sources

Sjöstadsföreningen/ElectricITY holds regular meetings for energy managers.

Download the document from our website:



Willy Ociansson can assess your housing association's energy consumption.

OUR ENERGI-GURU

This is Willy Ociansson, Sweden's foremost expert on energy efficiency. After meeting with 42 housing associations in Sjöstaden and carrying out “Ecodrives” in their various properties, he compiled a detailed evaluation of key energy systems from garage and cellar levels to lofts and rooftops. Willy proved that there were shortcomings in many of these buildings' designs and pinpointed where there was potential for improvement in their basic construction and the management of their energy systems. He also provided input regarding renewable energy solutions and investments that could be made to reduce energy consumption.

We can offer members free energy mapping of their buildings and to define a plan of action if they agree to our “Energy at home” challenge. This means that participating housing associations would be engaged in a systematic process to work for energy efficiency and to use renewable energy sources.

Sjöstadsföreningen member associations that have carried out Ecodrives together with Willy Ociansson between 2013–2018 are:

Bukten 1	Redaren
Båtbyggaren	Revet
Båtklubben	Olympia
Dyningen	Seglatsen
Ekudden	Sickla Kanal
Farleden	Sjöportalen 1
Glödlampsfabriken	Sjöpärlan
Grynnan	Sjöresan
Innanhavet	Sjöstaden 1
Hammarby Ekbacke	Sjöstaden 2
Hammarby Kaj	Sjöstaden 3
Hammarby Kanal	Sjöstadshamnen
Hammarby Park	Sjöstadsparterren
Hammarby Sjö 1	Sjöstadspiren
Hammarby Strand	Sjöstadsudden
Hamnkranen	Sjöstadsviken
Henriksdalskajen	Slusstornet
Holmen	Storseglet
Knallen 1	Strandkanten
La Dolce Vita	Älven
Lugnvattnet	







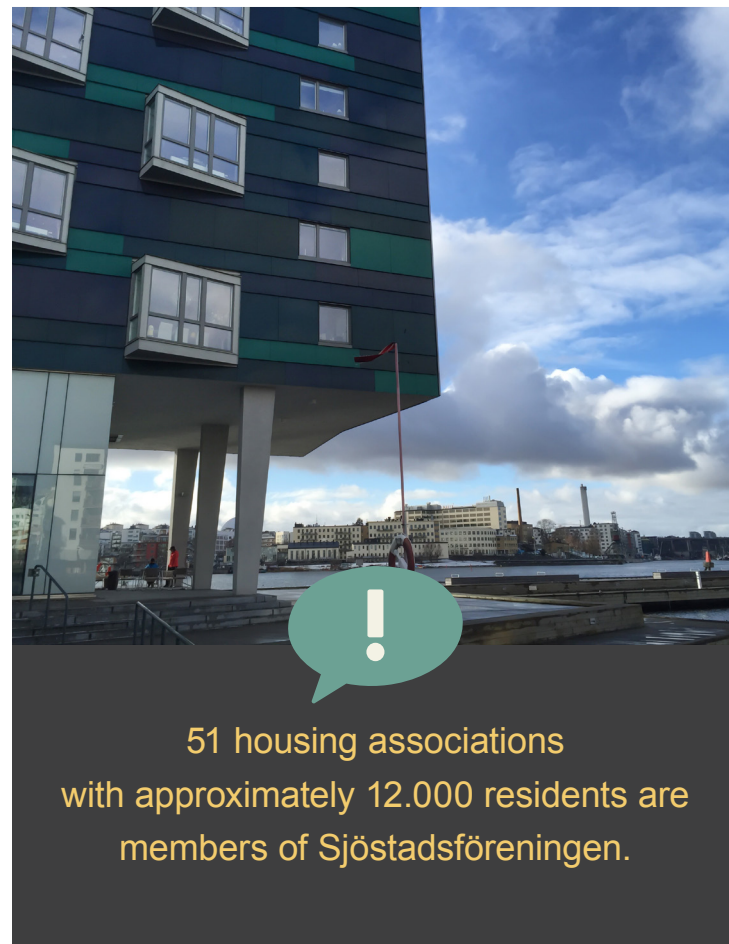
Peter Carlsson of the Knallen 1 housing association recoups SEK 1.210.000 for its members per year as a result of energy savings.



## WHAT HAS YOUR NEIGHBOR DONE?

Sjöstadsföreningen holds regular meetings where energy managers are provided with information about the latest advancements in energy efficient technology and renewable energy sources.

Researchers and government/local authorities are invited to present their visions of how future solutions can be applied while energy managers share their own experiences of the energy-saving methods they have introduced. Not surprisingly, there is considerable interest in what the neighbors have done.



51 housing associations  
with approximately 12.000 residents are  
members of Sjöstadsföreningen.

# Who takes care of energy consumption in your building?

Energy issues are complicated: consumption is based on kilowatt hours, then there is taxation, the provision of district heating, thermal energy sourcing and a whole slew of other issues which all affect the efficiency of a building. Most housing associations have a trustee who is responsible for property management and the equipment that takes care of it. In our experience, this is not always an effective combination. Energy management systems are complex and it is not necessarily a given that the trustee has a proper understanding

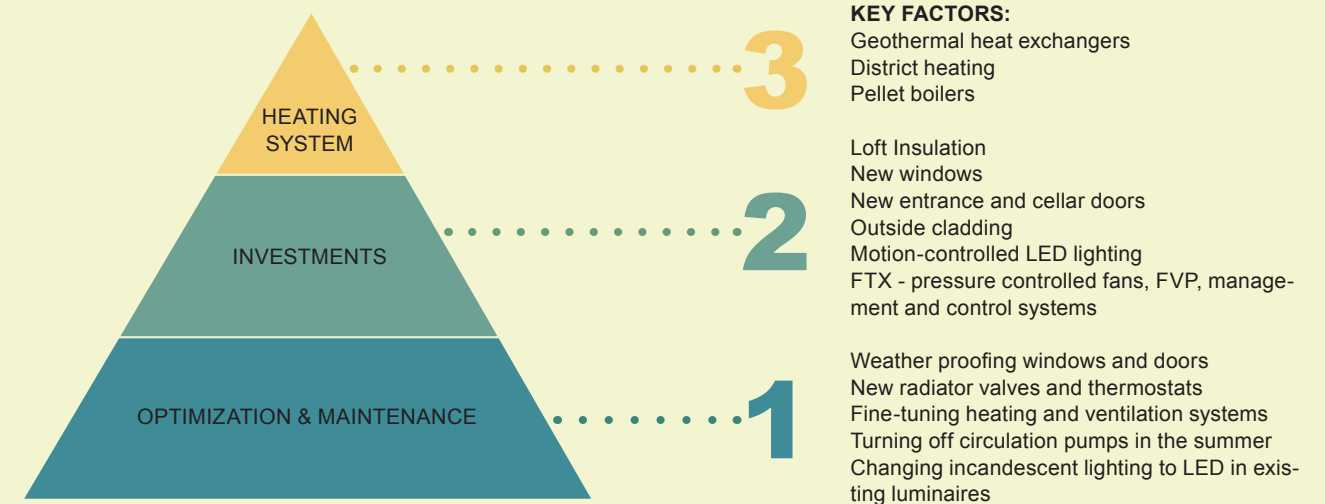
of the technology installed in a specific building.

Therefore, we have started something we call Targeted Energy Management. It is an initiative where we have co-partnered with the Environment Administration in Stockholm, Riksbyggen, HSB, SBC, Fastighetsägarna (community housing builders/administrators) and others. The idea is to ensure that an approved and competent contractor takes care of installed equipment while, in consultation with the association's board, takes steps to reduce energy usage and costs.



Targeted Energy Management is a long-term, transparent agreement between a contractor and the housing association's board whereby a compound set of goals serve to reduce energy consumption while ensuring lower energy costs.

## TARGETED ENERGY MANAGEMENT





# The building's own energy !

A housing association can save energy by utilizing the heat stored in the building itself – reusable thermal energy. This means that the building's own inherent heat accumulation is recovered from walls, floors and roofs that are already warm which is then recycled back into the heating system. Thus, the installation does not need to work at full capacity when the weather is cold. In practice this means that monitoring points are installed in selected apartments and the heating system is then regulated using these in combination with readings of the outside temperature. It is a simple step to take and for a modest investment can reduce energy costs by as much as 20%.

You can save  
**15–20%**  
of your energy costs.



## LED LIGHTS

Sjöstadsföreningen has risen to the call of "The Lighting Challenge". This means we are committed to substitute at least half of all the lights in our public spaces with low-energy LED bulbs. Most of the time, there is no reason to replace existing light fittings which means less redundant hardware.

HAS YOUR HOUSING  
ASSOCIATION  
SWITCHED TO LED  
LIGHTING?



Thanks to Göran Isaksson, light fittings in the Dyningen housing association have been repurposed to accept LED light bulbs.



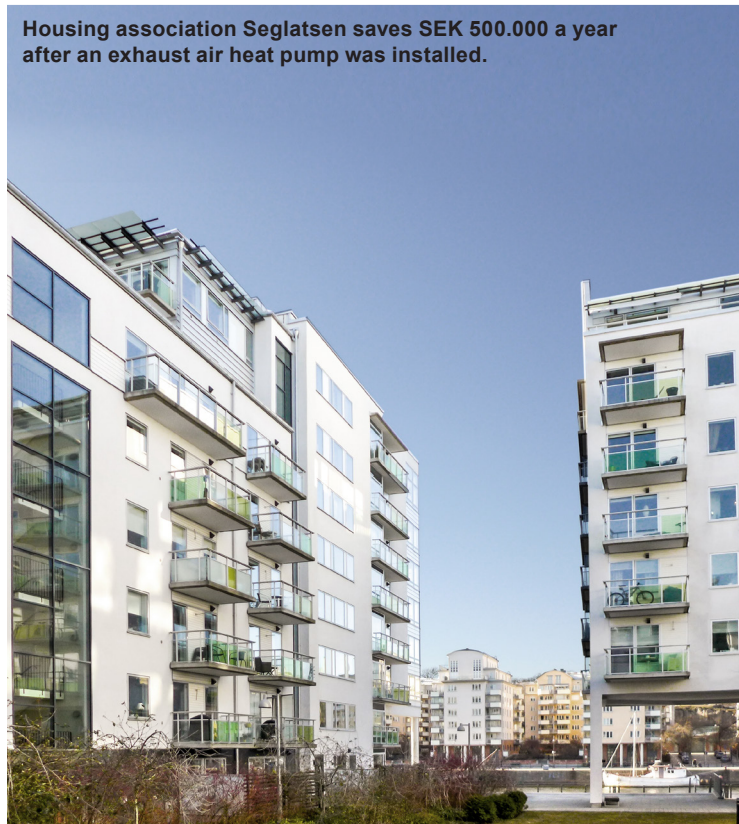


## EXHAUST AIR HEAT PUMP – INSTALL ONE!

85 percent of all housing associations in Sjöstaden have ventilation that works by fresh air being drawn in via filter-fitted inlets that are located under the windows. Here the air is heated and then channelled from bathrooms and kitchens up to vents mounted in the ceiling. This means that warm air – at 23° C and containing lots of energy – is simply pumped out into the atmosphere. In other words, we are heating the sky and wasting valuable energy.

By installing an exhaust air heat pump this energy can be recovered thus reducing the need for district heating while utilizing an inexpensive energy source to provide significant cost savings. Eleven housing associations are, or are about to, install exhaust air heat pumps. How is your energy manager dealing with this?

Housing association Seglatsen saves SEK 500.000 a year after an exhaust air heat pump was installed.



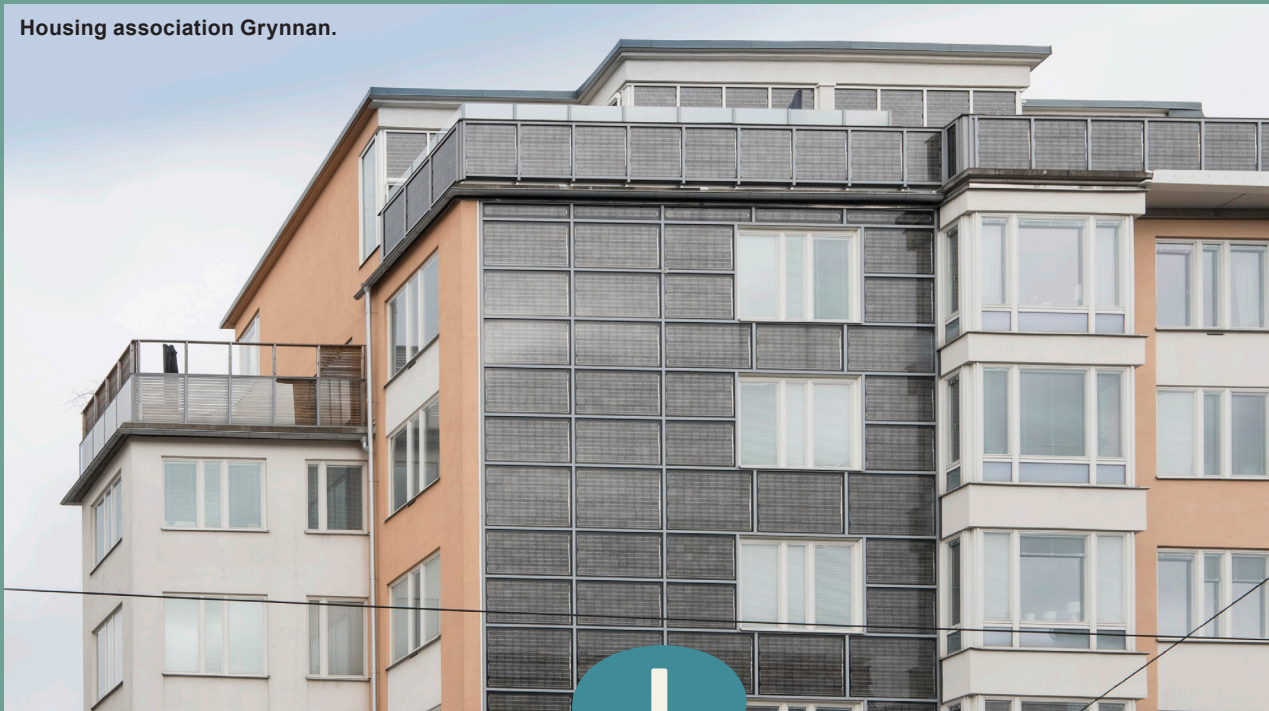
## SWITCH TO RENEWABLE ENERGY!

Solar cells, wind power and thermal energy are just a few examples of renewable energy sources – something that does not release harmful emissions into the atmosphere feeding the greenhouse effect (unlike fossil fuels extracted from coal, oil and gas).

PHOTO: NASA/SDO



Housing association Grynnan.



On January 1st, 2018, the Swedish government increased the level of subsidies for solar cell installations to

**30%**  
of the overall cost.

### SOLAR CELLS

The sun is a natural, environmentally friendly and free source of energy. Every hour, our earth receives as much energy from the sun as we humans use in an entire year. Sunlight hours in Sweden are about the same as those of Germany which is the world's most solar productive country.

Solar cell technology is well proven and can be easily installed on existing buildings. Once in place, cells require minimal maintenance and are a long-life solution to our clean energy needs. During the past few years the price of solar cells has gone down considerably and is now 100 times less than it was 40 years ago. This means that today solar energy is cheaper than fossil energy.

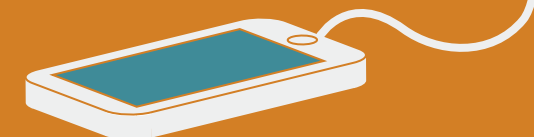
### WHAT IS THE DIFFERENCE-BETWEEN SOLAR POWER AND SOLAR HEAT?

Solar power is generated when a solar cell transforms sunlight directly into electrical energy – or in other words – they produce clean electricity. The process is quiet, requires no moving parts, no fuel and results in zero resource depletion.

Solar heat is created when the sun's rays are converted into heat by solar collectors. This heat is then transported by means of a circulating fluid and used for warming buildings or to heat water.

## The future of solar power

In Sweden, organic-based solar cells are currently being developed. These are manufactured using a thin backing film that can be applied to the outsides of buildings and on windows. They can also be used indoors in the form of curtains and solar filters.



ENERGI  
HEMMA



Energy Manager for the Sjöstad 2 housing association, Jan Fransson explains:

"We will be self-sufficient in cooling and heating when our geothermal system combined with exhaust air heat pumps, heat exchangers and accumulator tanks is installed." The association expects to make energy savings of over SEK 1.000.000 per year.

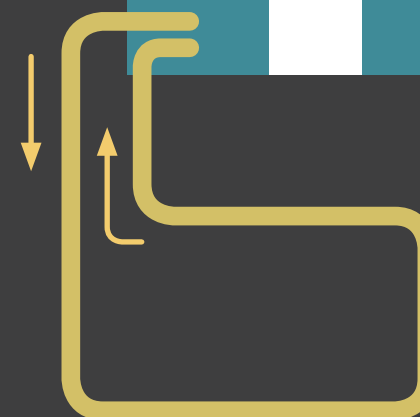


### GEOTHERMAL ENERGY

Some buildings in Sjöstad 2 use geothermal energy which is tapped through holes that have been drilled deep into the underlying bedrock. This provides a readily available solution for heating and cooling depending of the time of year.



For each unit of energy supplied, a geothermal system delivers the equivalent of four units back into the building.







## LIFE IS BETTER TOGETHER

We believe in the idea that life is better if we co-operate both in terms of shared experiences and knowledge as well as in practical implementation.

Therefore, we aim to bring together all the energy efficiency projects in our various housing associations into a single program with the intention of introducing a joint procurement process in a model we call: "Strategic Partnering". This will make us much more interesting for suppliers looking for

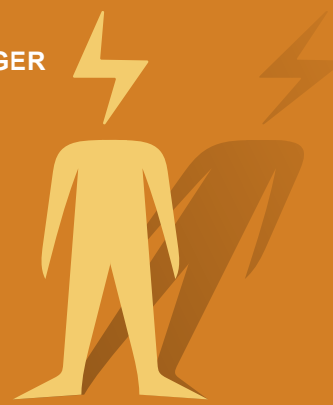
volume orders and means that we will be able to get better terms and lower prices.

Our intention is to form a team in which all parties can participate to develop long-term partnerships using technical solutions that lead to efficient installations while providing an increased return on investment. The idea was presented at an energy meeting in April 2018, and we anticipate the full support of Sjöstadens housing associations.



## Remember:

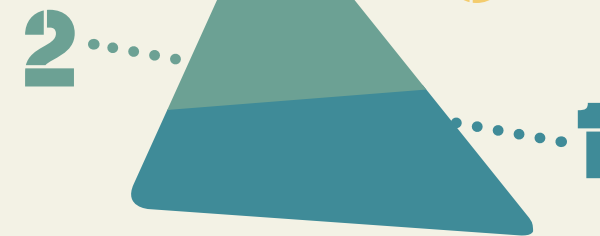
... appoint an  
ENERGY MANAGER



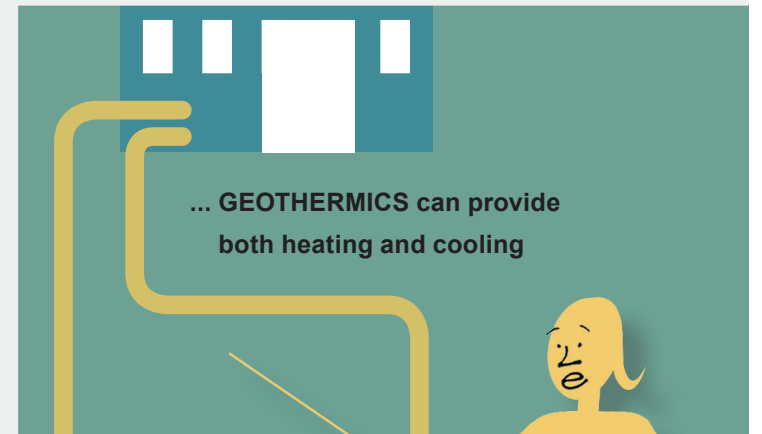
... map ENERGY  
USAGE AND  
SUPPLY in  
your building



... set TARGETS  
for your energy  
processes



... GEOTHERMICS can provide  
both heating and cooling



... the SUN can  
provide electricity  
and heat



... RECOVER  
heat from  
warm air  
before it is  
vented from  
the building



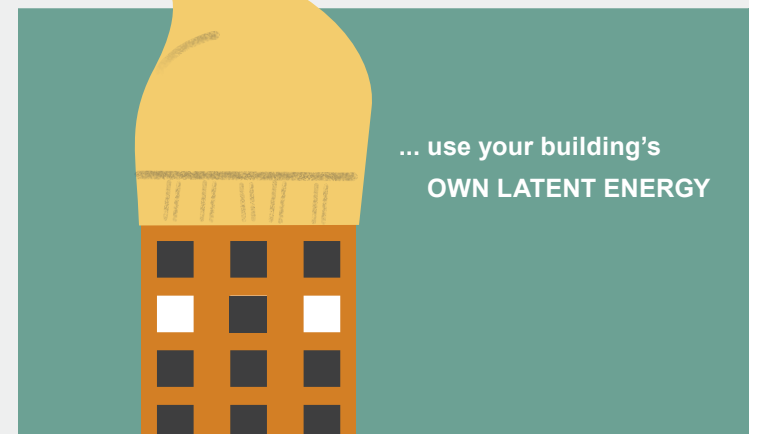
... attend the ENERGY  
MEETINGS that we  
arrange



... TOGETHER we  
can achieve ENERGY  
SAVINGS and  
reduce costs



... use your building's  
OWN LATENT ENERGY







WHY BUY AN  
ELECTRIC  
CAR IF I CAN'T  
CHARGE IT?

## CHARGE AT HOME

Another initiative of ours is called Charge at Home. Primarily this focusses on increasing the number of electric cars on our roads in order to reduce carbon emissions from fossil fueled vehicles. However, it's a bit like the old question of the chicken or the egg: If there are no charging points available for electric cars then interest in upgrading to a climate smart vehicle will be low. But if the infrastructure is in place, is easily accessible and simple to use, then interest in electric cars will go up. So what is the best way to

move forward? We have already assisted many housing associations when they installed charging points in their underground car parks.

Today, there are around 350 charging points in Sjöstaden properties with an additional 31 outdoor charging points available, one of which offers fast charging. It is said that we are the most vehicle charger-friendly district in Sweden. But it doesn't end there and our goal is to have 1.000 charging points in our underground car parks by 2020.

WE WANT TO MAKE  
ELECTRIC CARS A  
SIMPLE CHOICE.

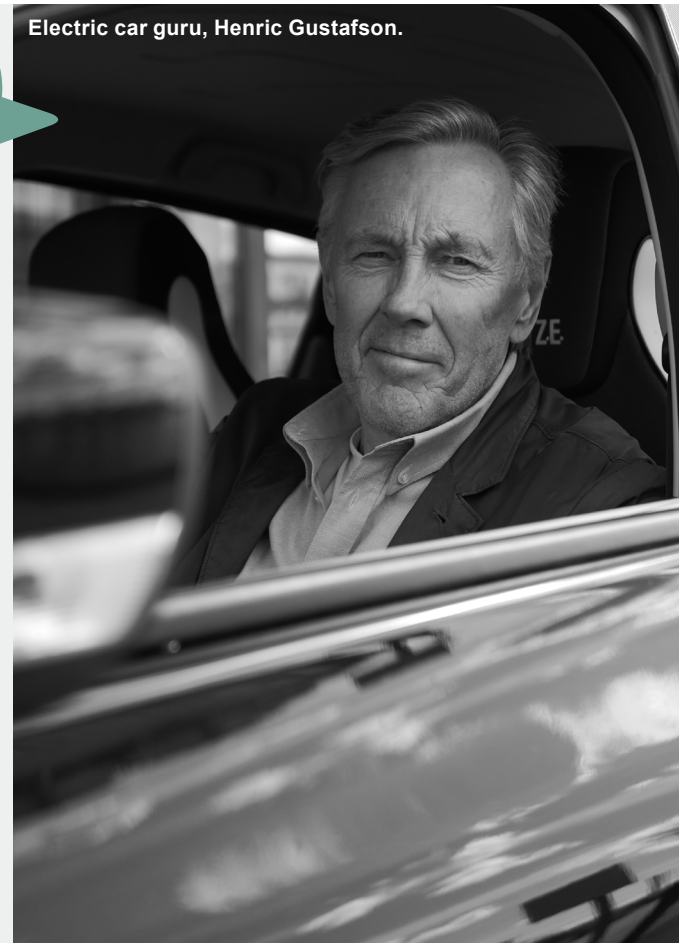
## HALF-PRICE CHARGING POINTS

Klimatklivet (The Climate Shift) is a Swedish government initiative that supports climate-smart programs that reduce carbon dioxide emissions at a local level. Klimatklivet means that local housing associations can receive grants totaling 50% of installation costs for a single charging point.

If there are no charging points in your underground car park, then you should raise the issue in a motion to the board of your housing association.

50%

Electric car guru, Henric Gustafson.

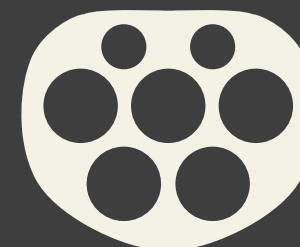


## So what is the charge then?

After purchase and installation, it works out at around SEK 10.000 including the 50% subsidy. If you calculate a 10-year depreciation on equipment and incurrent electricity consumption, the owners of electric cars will pay approximately SEK 250 in addition to their normal parking fees.

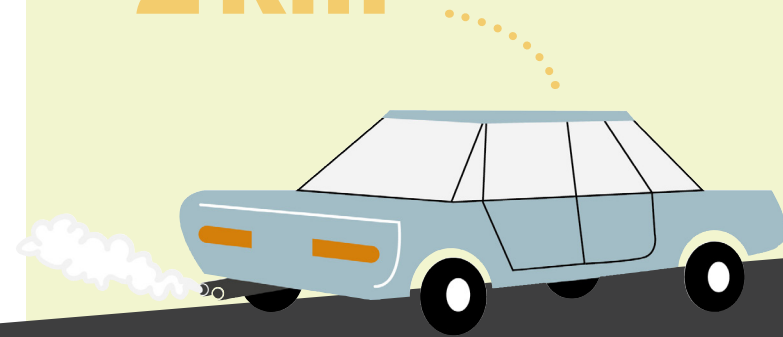


At laddahemma.se there is a quick reference guide which explains how to allocate charging costs among members of a housing association.





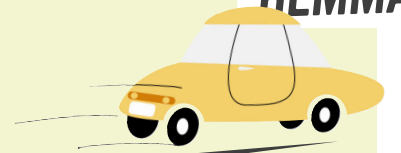
2 km



### TEN KILOMETERS FOR SEK 2.25

The cost of running an electric car works out at SEK 2.25 per 10 kilometers compared with a fossil fueled vehicle which will set you back around SEK 12 for the same distance travelled. In addition, maintenance costs are lower thanks to fewer moving parts. There is also the added bonus that electric cars are quiet and fun to drive.

10 km



LADDA  
HEMMA

An electric car can be driven 5 times further than a fossil-driven vehicle for the same amount of money.

## A smart charging point

Many people think that there is not enough electricity available to charge the ever-growing number of electric cars. But the solution to this is simple – Smart Charging. Here, a connection trickle-feeds the vehicle's batteries over night when energy consumption is low. This also means cost savings as charging is done during non-peak hours.

Today's charger solutions require that the appointed contractor must have detailed knowledge of electrical installations and data communication. The reason for this is that you can, using a simple app, control and monitor the charging status of your car.



To be eligible for a Klimatklivet grant, an intelligent charger with wireless communication capabilities must be used.

### Motion to install charging points

I propose that our association applies for a Klimatklivet grant so that we can install charging points for electric vehicles in our underground car park.

Our association has an important mission to work for our members' finances and electric vehicles are a part of this. Not only are they good for the environment, they are nice to drive and cheap to run.

With up to 50 percent of costs covered by Klimatklivet grants, the cost of installing a charging point will not exceed SEK 10.000. Depreciation on equipment and installation is spread over 10 years and if electricity consumption is based on a base-line of 10.000 kilometers driven per year, the total cost will be around SEK 250/ per month for the car owner (excluding the fee for the parking space).

Sjöstadsföreningen/ElectriCITY can assist the board by managing the application process, arranging equipment and installer contracts and compiling a final approval report. They have consi-

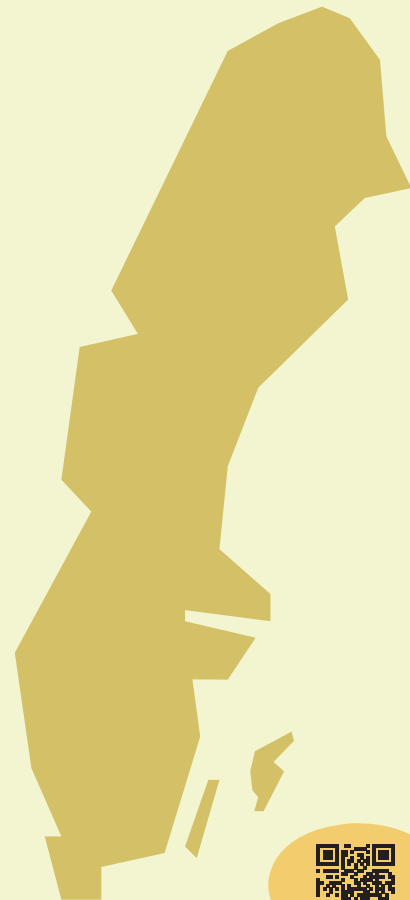
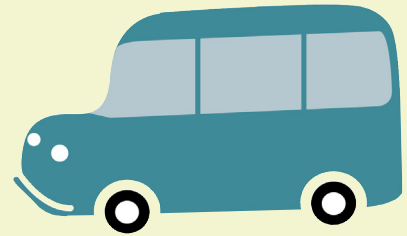


Download the document from our website



At [laddahemma.se](https://laddahemma.se) you can see how charging points should be installed.



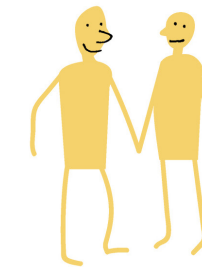
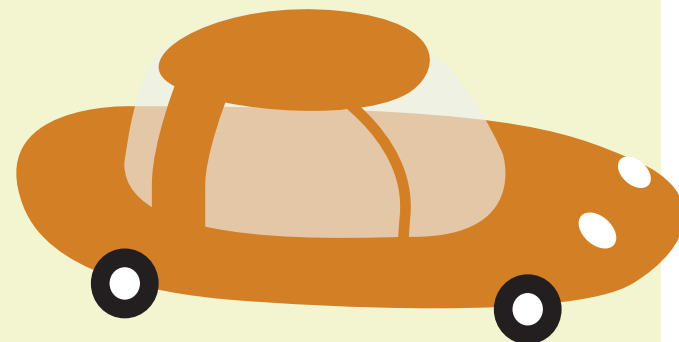


For information about the location of country-wide charging points go to: [www.laddinfra.se](http://www.laddinfra.se)

### WHAT ELECTRIC CAR SHOULD I CHOOSE?

When choosing which electric car is right for a particular household, we usually talk about daily needs compared to upper limit needs. How many kilometers do you drive daily? Probably not so many. Today, Swedes drive around 40 kilometers per day (figures supplied by the Swedish Transport Administration). But if you live in town, you are likely to drive a lot less. On average, a car is parked more than 90% of the time and therefore it is wise to choose a vehicle that corresponds with your daily needs. And keep in mind that a lighter car uses less energy.

When the time comes for a longer road trip, then it is better to rent a bigger car. Another option is to plan your journey in your own electric vehicle according to the availability of charging points along the route – you'll be surprised when you see how many are out there!



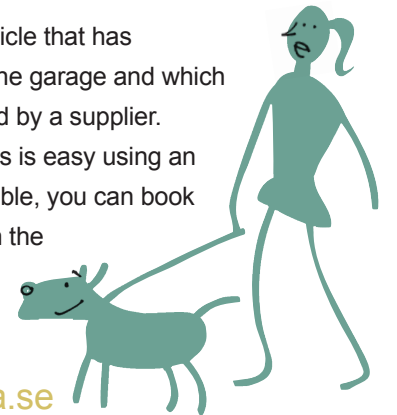
### ELECTRIC CAR POOLS?

In Sjöstad there are already car pools in operation. It is a "comfortable car owner option" for those of us who do not need to drive every day.

We want to take this one step further and are currently testing the viability of making a small electric car available in each of our housing association's own car parks. Here, three

households share the vehicle that has its own charging point in the garage and which is serviced and maintained by a supplier.

Booking these electric cars is easy using an app. If it is not available, you can book a car pool vehicle on the street instead.



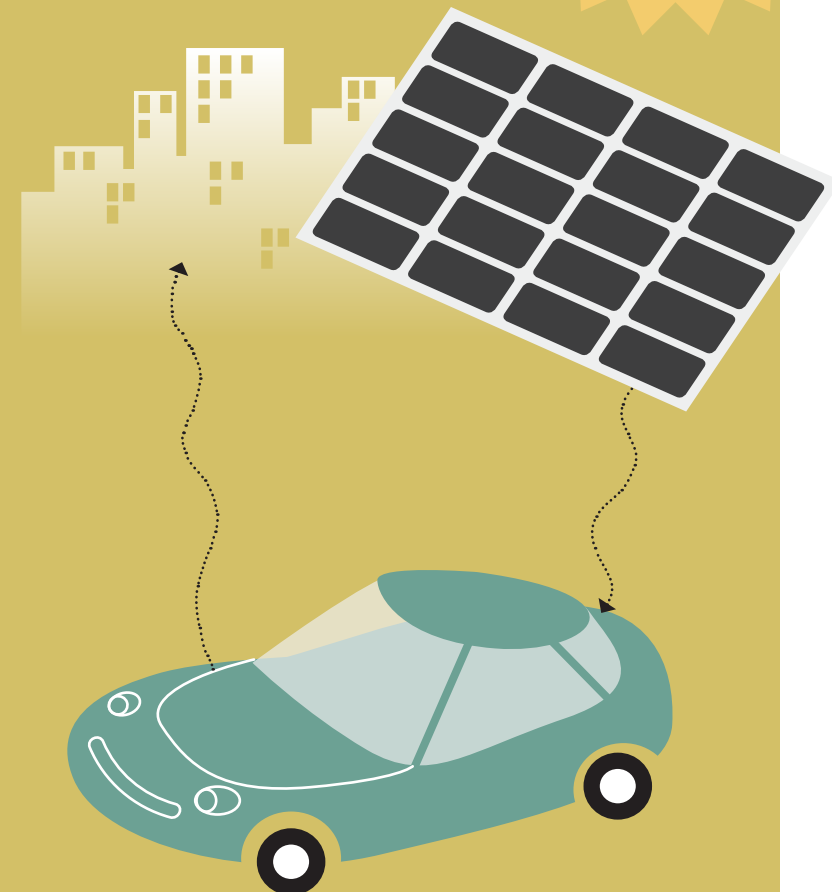
Read more about the initiative at [laddahemma.se](http://laddahemma.se)

## Hiring out your electric car battery?

Imagine being paid by your housing association for the use of your electric car battery when the vehicle is parked. Together with researchers and carefully selected suppliers, we are going to test the concept in the Autumn of 2018.

Here's how we reasoned: Solar cells mounted on the roof are used to charge a battery in the building's basement and our electric cars during the daytime. When we get home in the evening, which is when the need for power is at its highest, we can use this surplus electricity to cut energy costs at peak usage times, something which we became significantly aware of on January 1st, 2018 when evening tariffs went up.

What makes the concept viable is that there are now electric vehicles on the market that can both receive and provide electricity. If vehicle batteries are not regularly discharged below 20 percent, then a little extra molecular activity will keep their cells in good condition. This does not mean that the car is unusable for the owner during the day-time, rather that you are able to choose whether to drive it or leave it parked providing an additional energy resource for your building.





## NO SWEAT – TAKE THE BIKE!

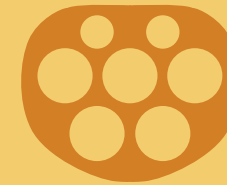
In 2017, 58 members of Sjöstadsföreningen tested commuting to work using electric bicycles. The trial lasted three-weeks and proved to be very popular. Many people were completely sold on the idea and even set off on longer journeys covering distances that they would otherwise never have traveled by bike and along the way discovered that it could be done at a comfortable pace while wearing regular clothes.

And the next step – the trial will be expanded with larger transport electric bicycles made available to Sjöstadsföreningen's members. The idea is that housing associations will provide transport electric bikes for free to members as part of a pool agreement between neighbors. It is a sound and environmentally friendly alternative to taking your car to the shops or to drop off the kids at school or the day care center.



## Remember:

... Klimatklivet means you receive a 50% subsidy FOR INSTALLING CHARGING POINTS

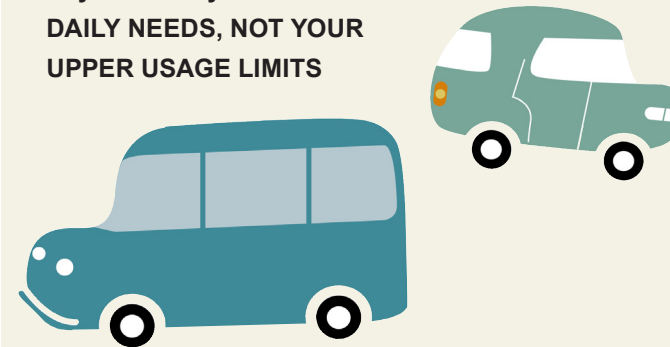


# 50%

... running costs for an electric car equate to SEK 2.25 per ten kilometers



... buy a car for your DAILY NEEDS, NOT YOUR UPPER USAGE LIMITS



... CAR SHARING cuts costs



... CHARGE AT NIGHT when it's cheap



... CHARGE AND REST on the move



... HIRE OUT your car battery



... CYCLE without breaking out in a sweat on your way ...



... TO WORK ... or THE SHOPS ...







### LIVE CLIMATE SMART!

In order to achieve a climate target equivalent of one and a half tons of carbon dioxide emissions per person/per year, we must all consider how we can contribute. The way we live, how we travel, what we eat and what we use in our day-to-day lives all play a part. We need to reflect over what we can do that makes a difference. It's just not about the bigger picture, but rather what we as individuals can accomplish here at home.

For example, we can heat our buildings using renewable energy sources, we can charge our electric cars using solar power and travel in relative silence by doing away with combustion engines.

The future is already here and it's not a question of using less energy, but rather using clean energy smarter that will allow us to reach climate targets. It is about our concern for the environment, our children and our grandchildren.

**HAMMARBY**  
**SJÖSTAD 2.0**



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