Solar Energy in Urban Planning Processes

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THE PLANNING PROCESS

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The life-cycle of the city, building and material
- The role of the urban planner

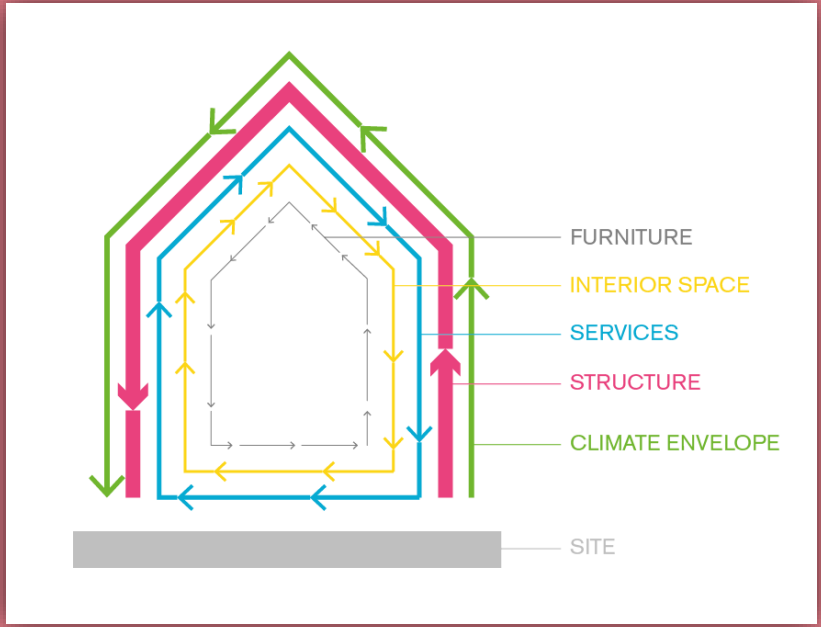

Illustration by White arkitekter with inspiration from
Stuart Brands concept “Sharing Layers” from *How Buildings Learn - Lifetimes of different layers*

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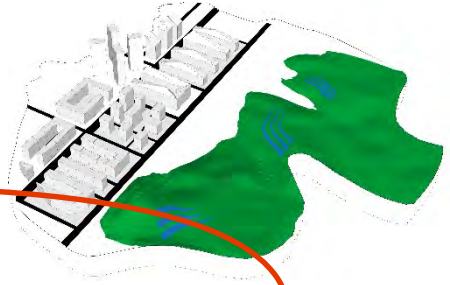
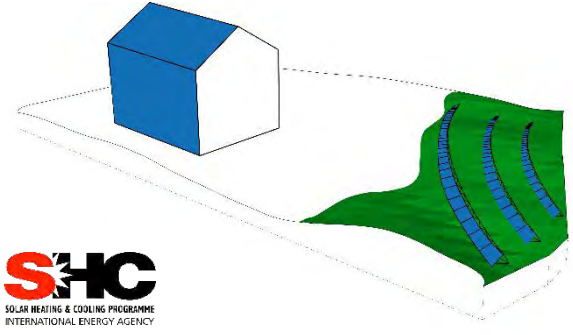
*Within the **Comprehensive/ Strategical Planning,** visions and strategies to reach certain goals are developed and connected to land use and zoning. Can be regional and municipal/city scale plans.*
Scale 1:2000 – 1:100.000



*In the **Urban and Landscape Design** stages the urban fabric and morphology is decided for a city district or for a landscape area.*
Scale: 1:1000 – 1:5000

At the ***Architectural Design*** *stage new and existing buildings or landscape systems are designed or altered.*
Scale: 1:10 – 1:500



***Detailed Development Plans** are the implementation of the urban design, and the land use is regulated into legally binding documents.*
Scale: 1:500 – 1:2000

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Stockholm Royal Seaport

- → 12 000 dwellings
- → 35 000 working places
- → 600 000 sqm commerical space
- → 236 ha
- → First buildings finished in 2012
- → Area finishing 2030
- → City owns the land

Illustrattive plan of Stockholm Royal Seaport by City of Stockholm

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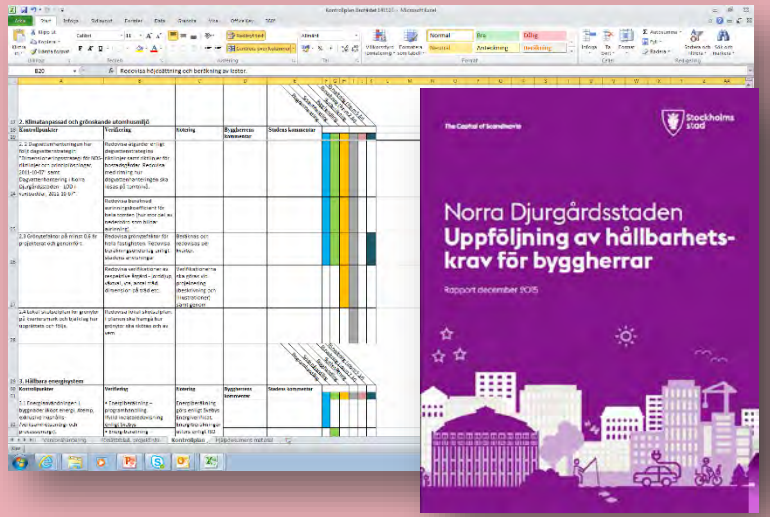

Targets and Vision

Implementation

- Specific requirements

Follow-up

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Energy principles

- ➔ Local energy generation
- ➔ Energy efficient buildings
- ➔ Low CO_2 impact from embodied energy
- ➔ Energy efficient construction

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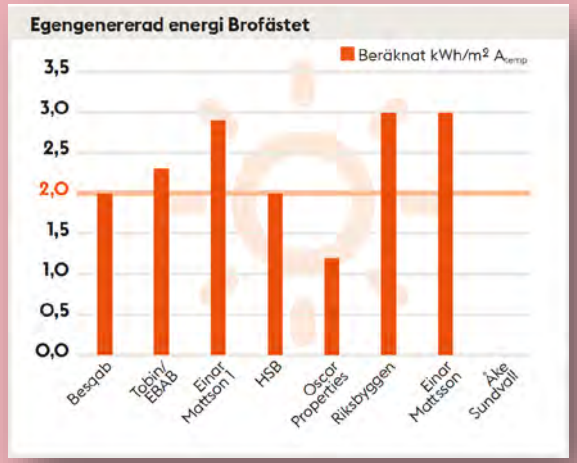
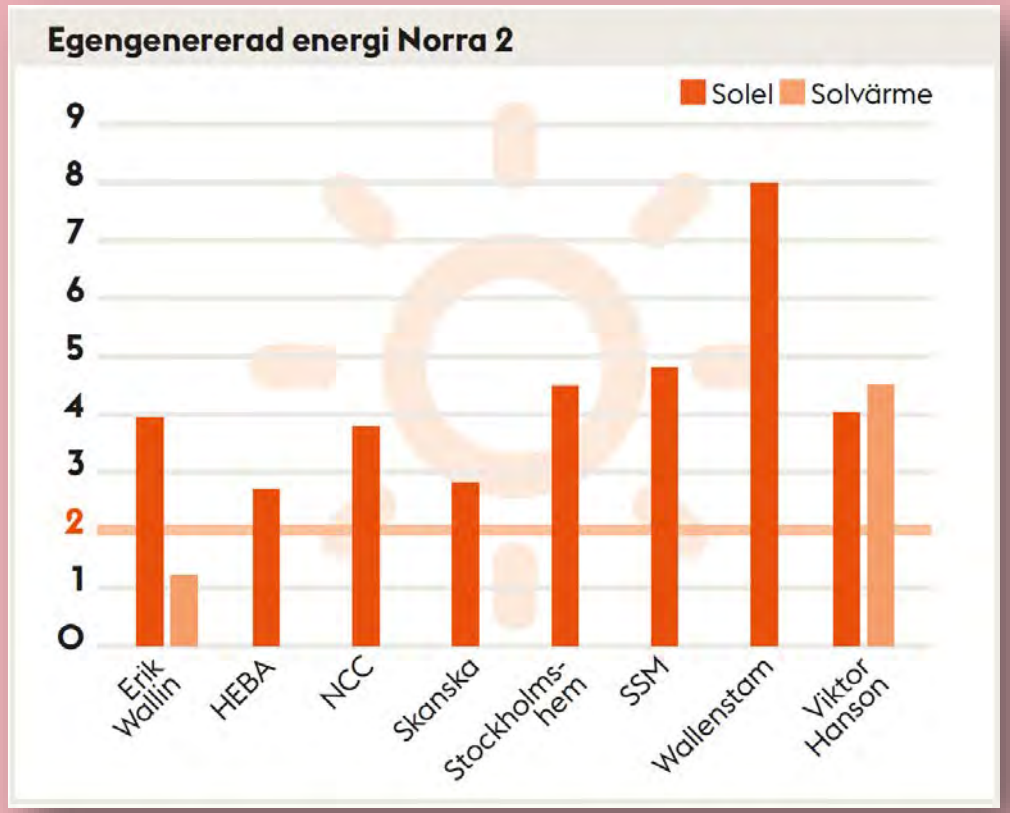
Locally Generated Energy

Diagrams extracted from follow-up report of Stockholm Royal Seaport, by City of Stockholm

Requirement
2 kWh/m^2 PV, or
6 kWh/m^2 solar thermal or a combination





SUCCESS FACTORS

- Early dialogue between local authority and developers
- Specific requirements connected to overall vision and strategies
- Capacity building and knowledge sharing
- Robust organisation with sustainability manager
- Clear process: land procurement ➔ architectural competition ➔ sustainability implementation programmes

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SOLAR RIGHTS

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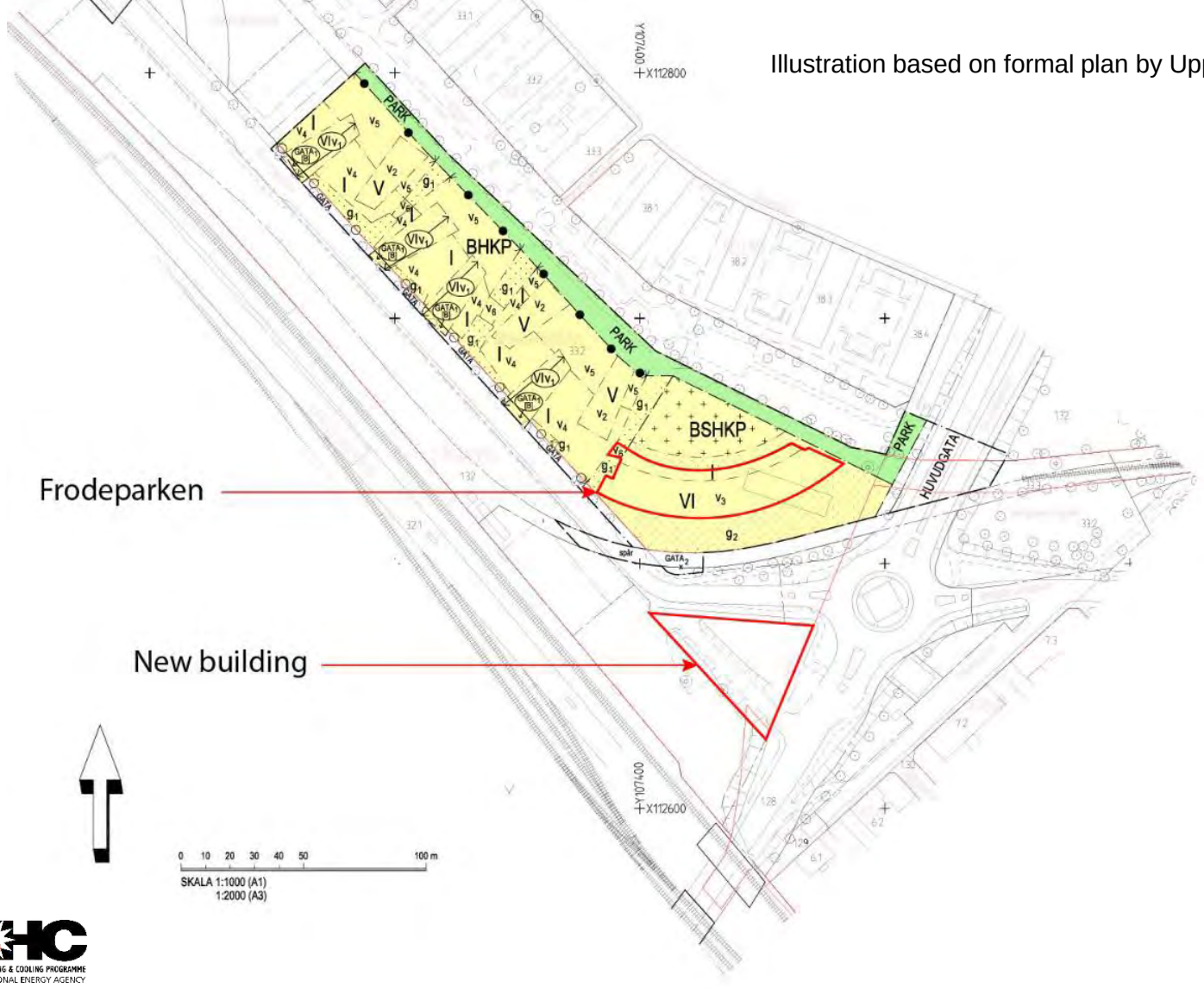
Photo by Thomas Zaar of Frodeparken, Uppsala.

Illustration based on formal plan by Uppsala municipality



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LOAD MATCH

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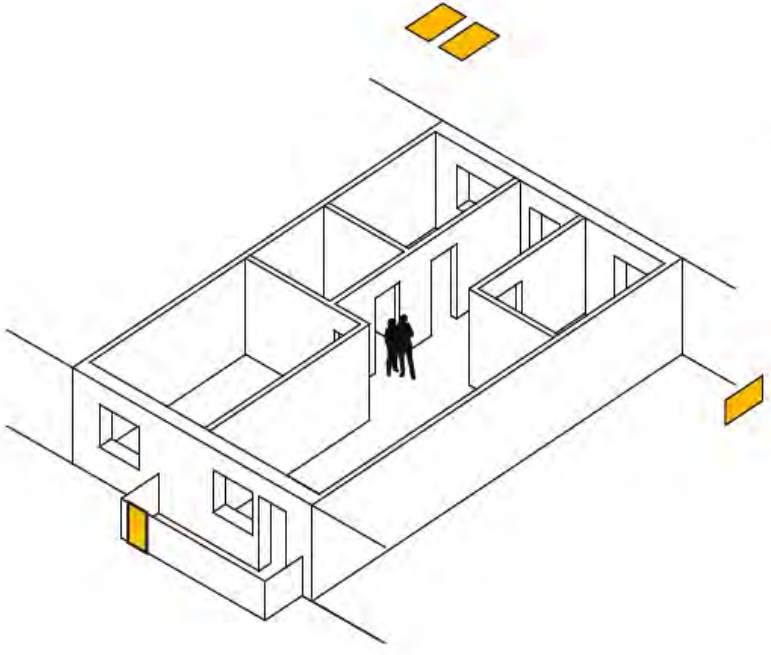
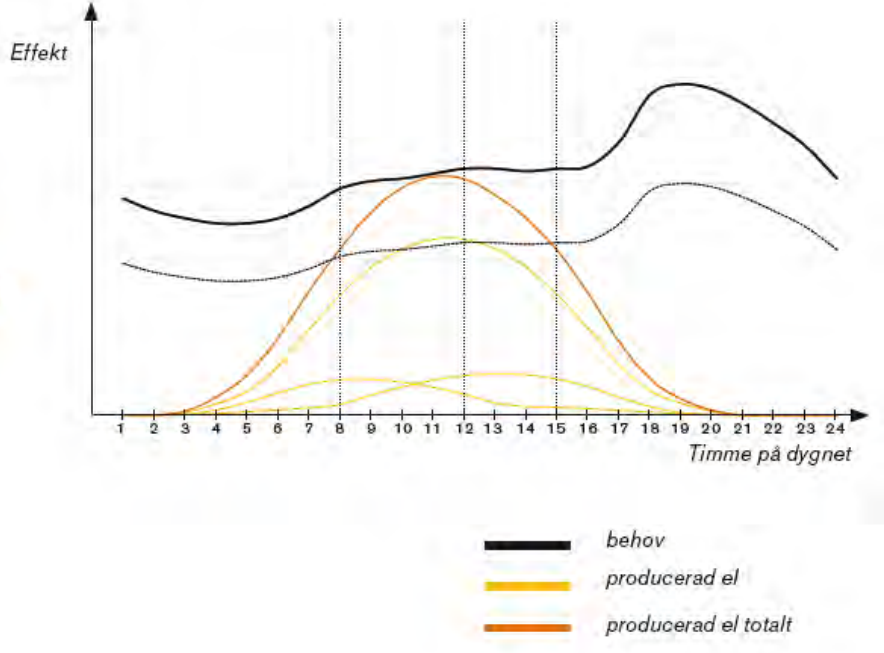
EXEMPEL: 3 ROK

Paneler på tak + östsydöstfasad + sydsydvästfasad





Takpaneler	ca 2,0 m²
Paneler på östsydöstfasad	ca 0,2 m²
Paneler på sydsydvästfasad	ca 1,1 m²

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Energy coverage per building =

Energy generation

energy need

STADSBYGGNADSPRINCIPER

Energiproduktion/energibehov:
1,7 (PV) - 2,2 (ST)
Energiproduktion/m²:
90 (PV) - 315 (ST)

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THANK YOU!

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