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REVIEW OF THE ACHIEVEMENTS IN CZECH REPUBLIC



Jiří Karásek, senior consultant
SEVEn, The Energy Efficiency Center

BARRIERS TAKEN INTO ACCOUNT

- ❑ National legal Framework & policies
 - Legislation for consumer **protection**
 - **Ownership of technology** – operation and development
 - **Sharing** energy and community ownership principles

- ❑ Ensuring the correct and efficient use of technologies (economic, environmental)
 - Energy **production, storage**
 - Energy **efficiency**
 - Demand response



PERSPECTIVES FROM THE CZECH REPUBLIC

ENERGY COMMUNITY OF PŘEŠTICE



PŘEŠTICE - AT THE START

 Southern Bohemia  Population of 8,000



- Meeting 08/15/2022
- Presentation of the Draft of Feasibility Study for the City
- Getting to know the next steps
- Exchange of necessary information and data

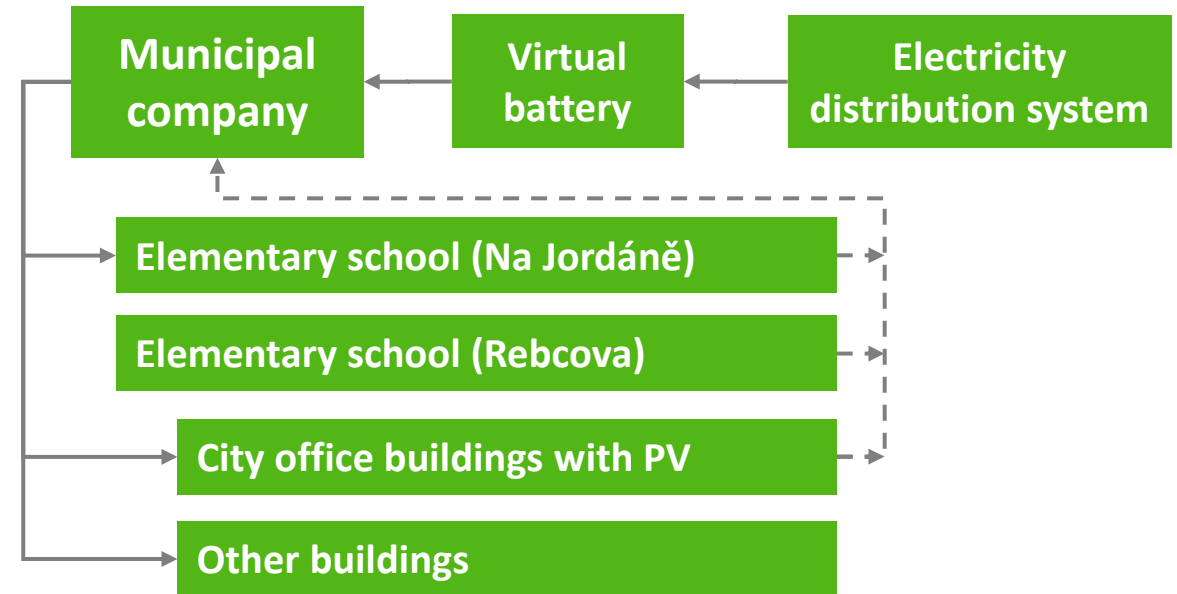


Meeting the mayor and vice-mayor

PRACTICAL EXAMPLES - PŘEŠTICE

The power supply system:

- ❑ The proposed structure of electricity management is assumed to be the same as used in one of the first and pilot projects in the Czech Republic.
- ❑ Two buildings already have PV plants installed
 - Na Jordáně
 - Rebcova
- ❑ Additional buildings will be selected

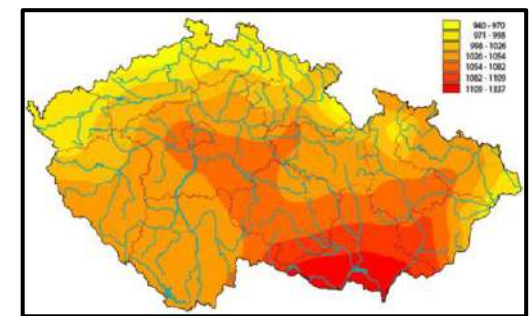
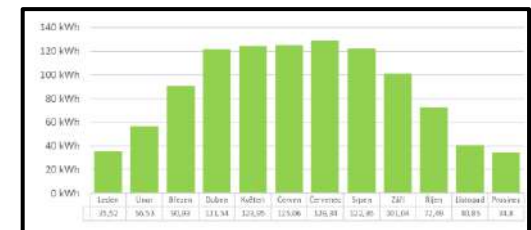
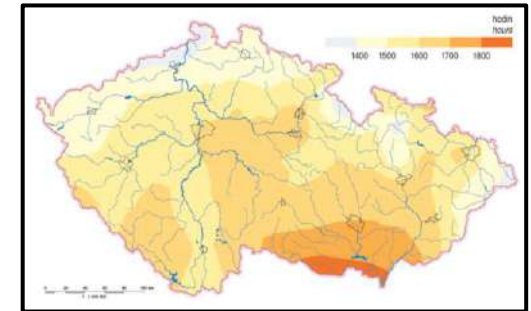


- *The municipality is the founder of a municipal company that produces electricity and supplies it to its customers.*
- *The municipal company is the only supplier of electricity to its customers.*
- *Electricity is produced on site by technologies managed by the municipal company*

FEASIBILITY STUDY - PŘEŠTICE

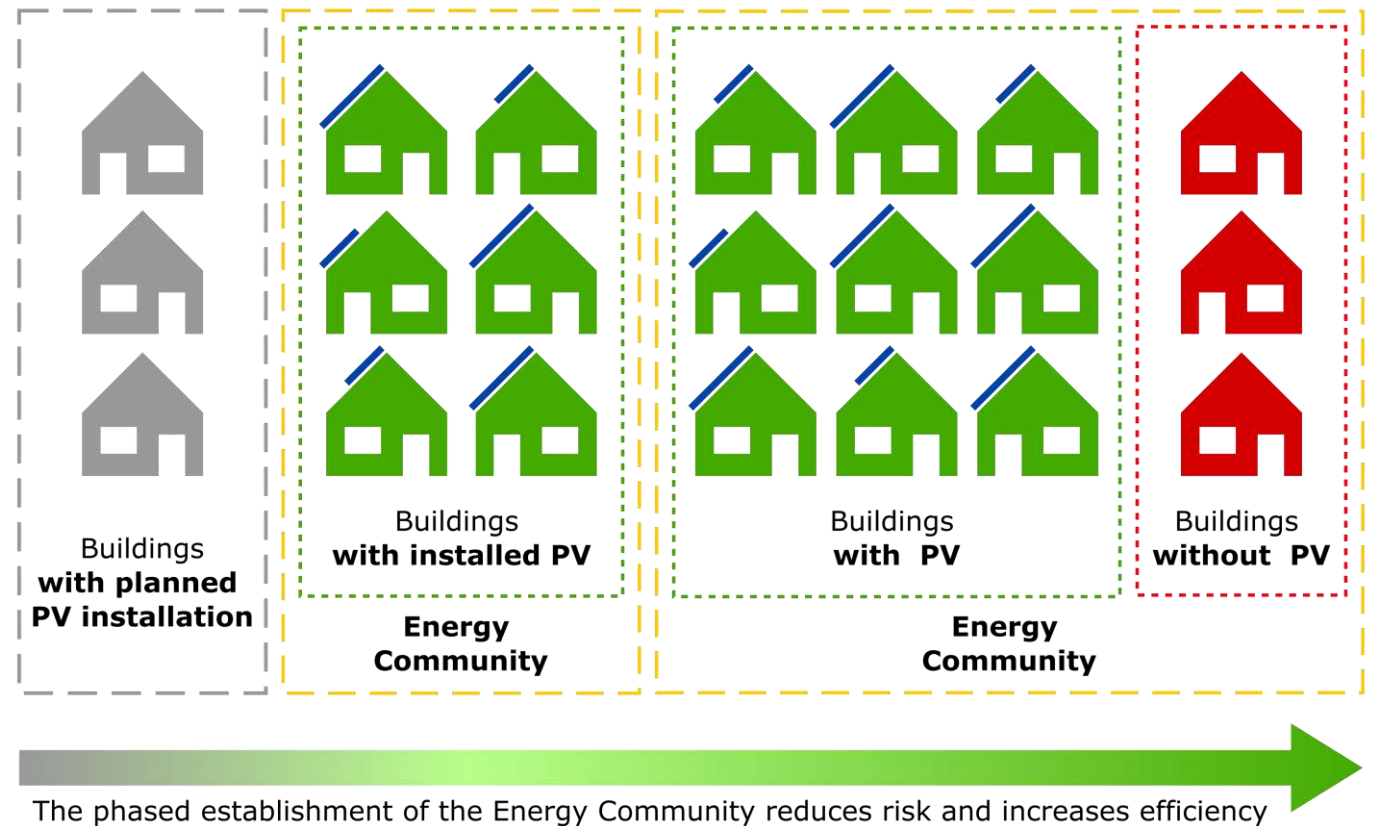
- ❑ Evaluation of **31 municipal buildings** in total
- ❑ Determination of the possibility of **PV power production**
- ❑ Evaluation of each building:
 - ❑ Determination of the usability of the building areas
 - ❑ Orientation
 - ❑ Roof plane slope
- ❑ Considering different types of PV panels
- ❑ Accounting for PV panel efficiency

Číslo	Označení objektu	Adresa	kWh/rok pro 1kWp	roční odchylka	kWh/(m2.rok)	MWh/rok
1	Radnice	Masarykovo náměstí 167	1 037	60	1 302	162,75
2	MŠU Husova	Husova 465	924	53	1 163	69,78
3	MŠU + knihovna	Husova 1079	1 054	65	1 320	264,00
4	DPS	Máchova 556	1 022	58	1 183	44,95
5	KKC + U Píčovka	Masarykovo náměstí 311	1 030	61	1 292	155,04
6	DHP	Třebízského 24	900	53	1 134	118,40
7	Depozitář DHP	Hlávkova 22	871	43	1 105	8,84
8	Středisko volného času Slunečnice	Řebčova 499	938	60	1 179	58,95
9	Hasičská zbrojnice	Mlýnská 1123	1 012	55	1 273	89,11
10	Velebné WC	Velešlavínova 1318	753	40	963	23,11
11	Občanská vybavenost	Žeravice 41	941	58	1 184	59,20
12	KČT	V Brance 1344	1 000	62	1 264	189,80
13	ZŠ Na Jordáně	Na Jordáně 1146	996	65	1 247	187,05
14	ZŠ Bečova	Na Jordáně 1146	986	56	1 240	155,00
15	Školní jídelna	Na Jordáně 1146	965	47	1 193	298,25
16	ZŠ + MŠ	Na Jordáně 1146	1 020	06	1 270	819,00
17	MŠ Dukla	Skotčice 98	1 050	62	1 316	78,96
18	MŠ Gesa	Dulětická 969	1 054	65	1 320	1 320,00
19	ZUŠ	Gagarinova 202	1 054	65	1 320	1 056,00
20	Dům ob. vybavenost	Poděbradova 1027	1 054	65	1 320	158,40
21	Dům ob. vybavenost (zubaři)	Masarykovo náměstí 104	1 054	65	1 320	52,80
22	Dům ob. vybavenost (lékaři, záchranná služba)	Sedláčkova 553	1 054	65	1 320	31,68
23	Dům ob. vybavenost (lékaři)	Husova 760	956	59	1 202	72,12
24	Sběrný dvůr	Průmyslová 454	1 016	56	1 276	102,08
25	Vybav.	Mlýnská 1095	927	51	1 171	175,65
26	Prodejna	Velešlavínova 309	1 054	65	1 320	323,40
27	Prodejna	Velešlavínova 310	753	40	963	28,89
28	Prodejna	Velešlavínova 310	753	40	963	30,82
29	Hospitace Žeravice	Žeravice 127	1 089	00	1 308	93,82
30	Bytový dům + provozovny	Rybova 287	998	62	1 252	140,22
31	Bytový dům	Slovenská 1048, 1049	960	50	1 213	121,30
32	Bytový dům	Slovenská 1050, 1051	960	50	1 213	121,30
33	Bytový dům	Nepomucká 294	1 045	62	1 310	98,25
Celkový pozemční výkon (MWh/rok)						6 704,06



FEASIBILITY STUDY - PŘEŠTICE

- ❑ Establishing phases for engaging buildings in the energy community
- ❑ Phase I
 - ❑ Connection of buildings with installed PV or planned installation of PV
- ❑ Phase II
 - ❑ Connection of buildings without PV
 - ❑ Facilities selected based on community energy balance



FEASIBILITY STUDY - PŘEŠTICE

Option 1

- **existing buildings with already installed PV** form the energy community, for which the enlargement of the PV installation is proposed

Option 2

- **other municipal buildings** are involved as well into the energy community


Option 3

- inclusion of **apartment buildings** into the energy community, for which a PV plant is designed

Option 4

- involvement of **all school buildings**


FEASIBILITY STUDY - PŘEŠTICE

 **Total electricity consumption in the EC = 193.58 [MWh/year]**

Option 1

Total electricity production from PV = 174.74 [MWh/year]


Investment estimated: ~ 154 – 277.2 thous. EUR

 **Total electricity consumption in the EC = 220.98 [MWh/year]**

Option 2

Total electricity production from PV = 219.80 [MWh/year]


Investment estimated: ~191.8 – 345.24 thous. EUR

 **Total electricity consumption in the EC = 257.38 [MWh/year]**

Option 3

Total electricity production from PV = 308.80 [MWh/year]

Investment estimated: ~269.2 – 484.56 thous. EUR

 **Total electricity consumption in the EC = 253.18 [MWh/year]**

Option 4

Total electricity production from PV = 450.88 [MWh/year]

Investment estimated ~375.2 – 675.36 thous. EUR

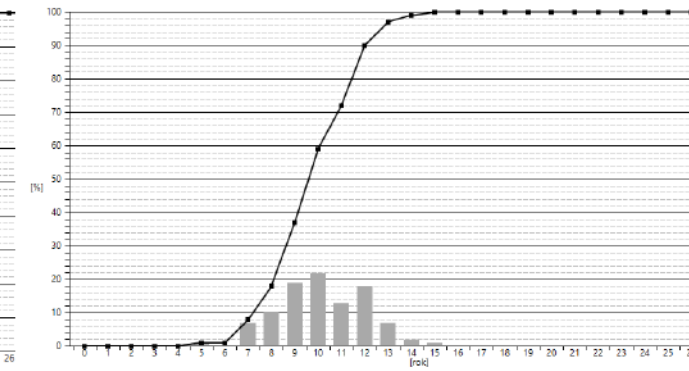
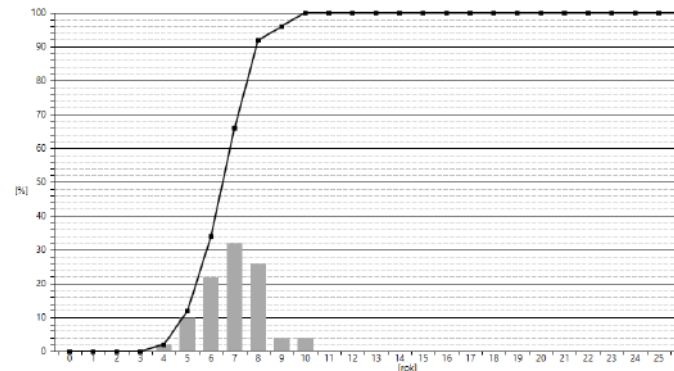
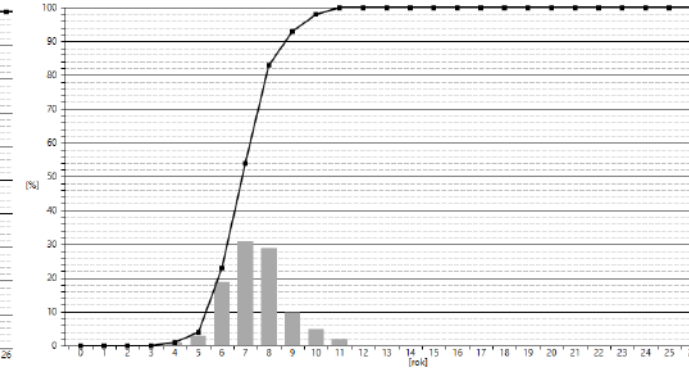
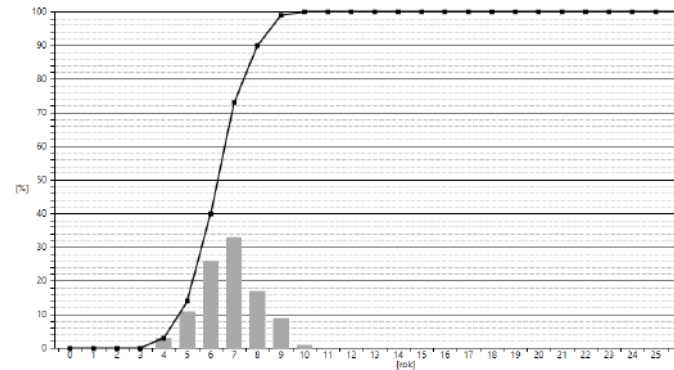
FEASIBILITY STUDY - PŘEŠTICE

Possibilities for funding are described in the study

- ❑ Program RES+ of Modernization fund
- ❑ Operational program Environment.

Economic analysis performed

- ❑ Discounted payback period
- ❑ Net present value for a 20-year project lifetime
- ❑ Price of energy is considered of 0.26 EUR/kWh with annual increase of 0.008 EUR/kWh.year
- ❑ Payback period varies from **6,78 years** for option 1 up to **10,16 years** for option 4



PERSPECTIVES FROM THE CZECH REPUBLIC ENERGY COMMUNITY OF TÁBOR



TÁBOR – 1. STEPS

 Southern Bohemia  Population of 34,000



- ❑ The city deals with the possibilities of energy communities
 - Many surveys and data collections have been carried out
- ❑ List of buildings in the city administration (**210 buildings**) is created
 - Building **evaluation criteria**: suitability of the PV plant installation (location, roof, orientation, possibility to use energy at the place of production)
- ❑ Energy supply organization already exists
 - BYTES s.r.o.

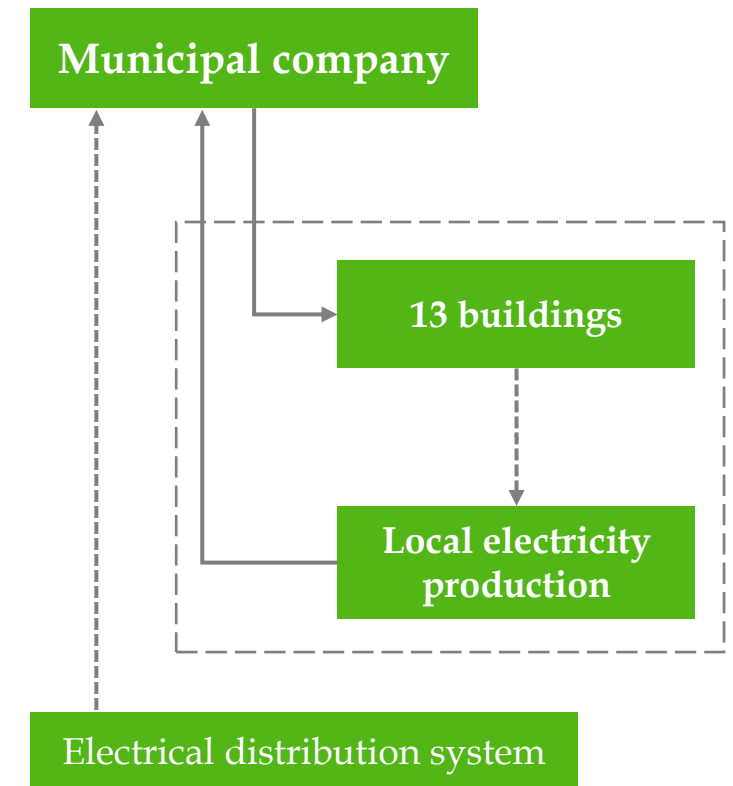


PRACTICAL EXAMPLES – TÁBOR

🌐 Southern Bohemia 🧑 Population of 34,000

- ❑ Meeting 1/13/2022
- ❑ The city has identified 13 Buildings for the installation of PV power plants
 - feasibility studies are in progress for each building
 - grants are expected
- ❑ One of the buildings is an apartment building for social housing
 - A good example for the public

Design of power supply system:



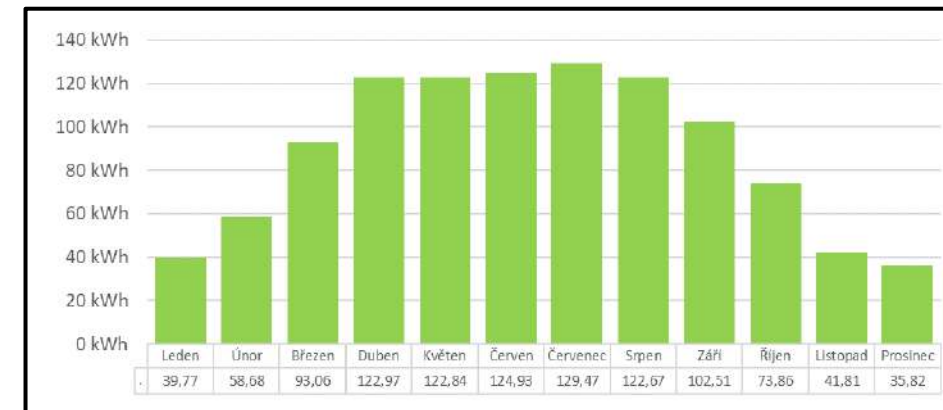
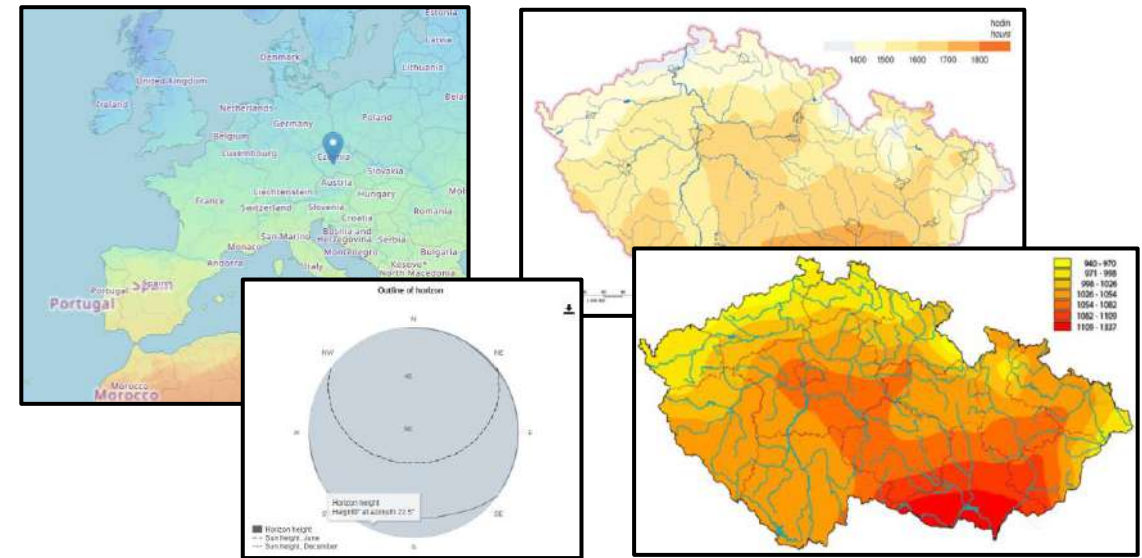
FEASIBILITY STUDY - TÁBOR

Electricity generation from PV

- Evaluation of each building
- Determination of the usability of the building areas
 - Orientation, Slope

Optimization based on the energy needs of the building

- Considering types of PV panels
- Accounting for PV panel efficiency



Calculation of electricity generation potential:

FEASIBILITY STUDY - TÁBOR

Option 1

- full use of the potential roof surfaces of **all municipal buildings**, a PV plant with **maximum electricity production** is designed for each building

Option 2

- **50% utilization of the potential areas of the roofs** of all analyzed buildings is considered

FEASIBILITY STUDY - TÁBOR

Option 1

- **Total electricity consumption** in the EC = 1,203.00 [MWh/year]
- **Total electricity production** from PV = 1,965.80 [MWh/year]
- **Investment** estimated: 1,665 – 2,997 thous. EUR

Option 2

- **Total electricity consumption** in the EC = 1,203.00 [MWh/year]
- **Total electricity production** from PV = 982.90 [MWh/year]
- **Investment** estimated: 832 – 1,498 thous. EUR

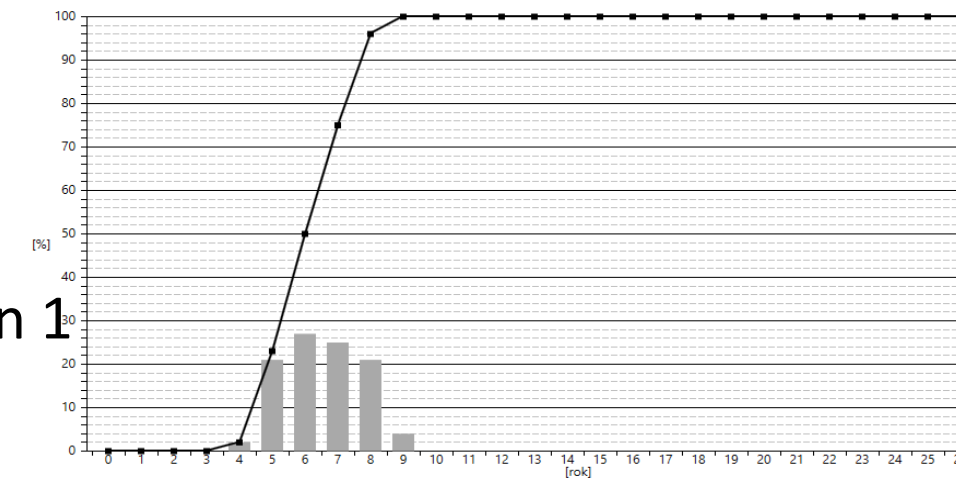
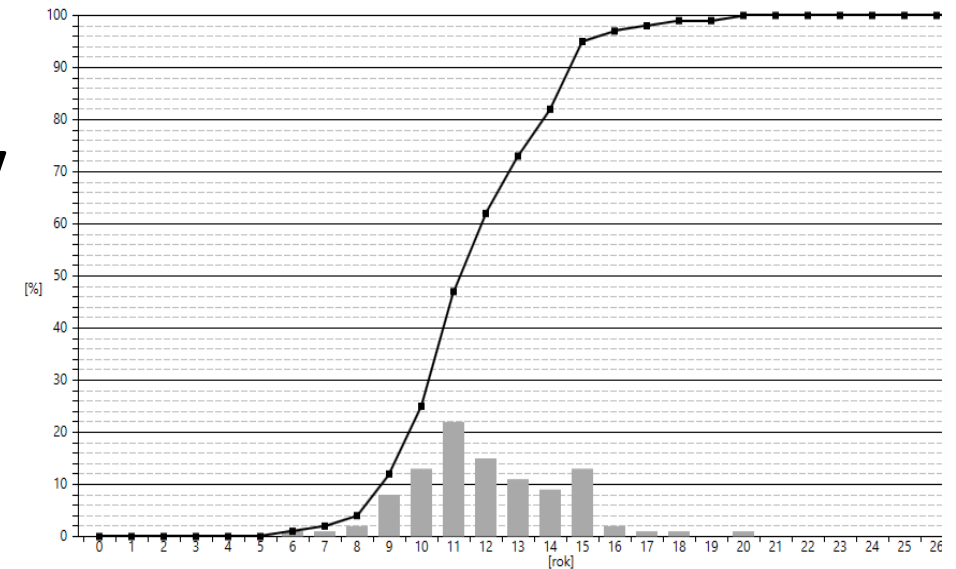
FEASIBILITY STUDY - TÁBOR

Possibilities for funding are described in the study

- ❑ Program RES+ of Modernization fund
- ❑ Operational program Environment.

Economic analysis performed

- ❑ Discounted payback period
- ❑ Net present value for a 20-year project lifetime
- ❑ Price of energy is considered of 0.26 EUR/kWh with annual increase of 0.008 EUR/kWh.year
- ❑ average payback period is **12.05** years for Option 1 and **6.53** years for Option 2

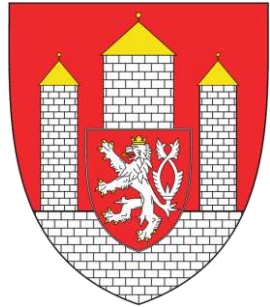


PERSPECTIVES FROM THE CZECH REPUBLIC
ENERGY COMMUNITY OF ČESKÉ BUDĚJOVICE



ČESKÉ BUDĚJOVICE - THE EPC PROJECT IN PROGRESS

🌐 South Bohemian Region 📍 Population app. 93,000



☐ 10 areas

- 6 elementary schools
- 2 kindergartens
- 2 retirement homes

☐ EPC

- comprehensive energy measures
- **All 10 buildings with the PV installation**

☐ PV power plants installation

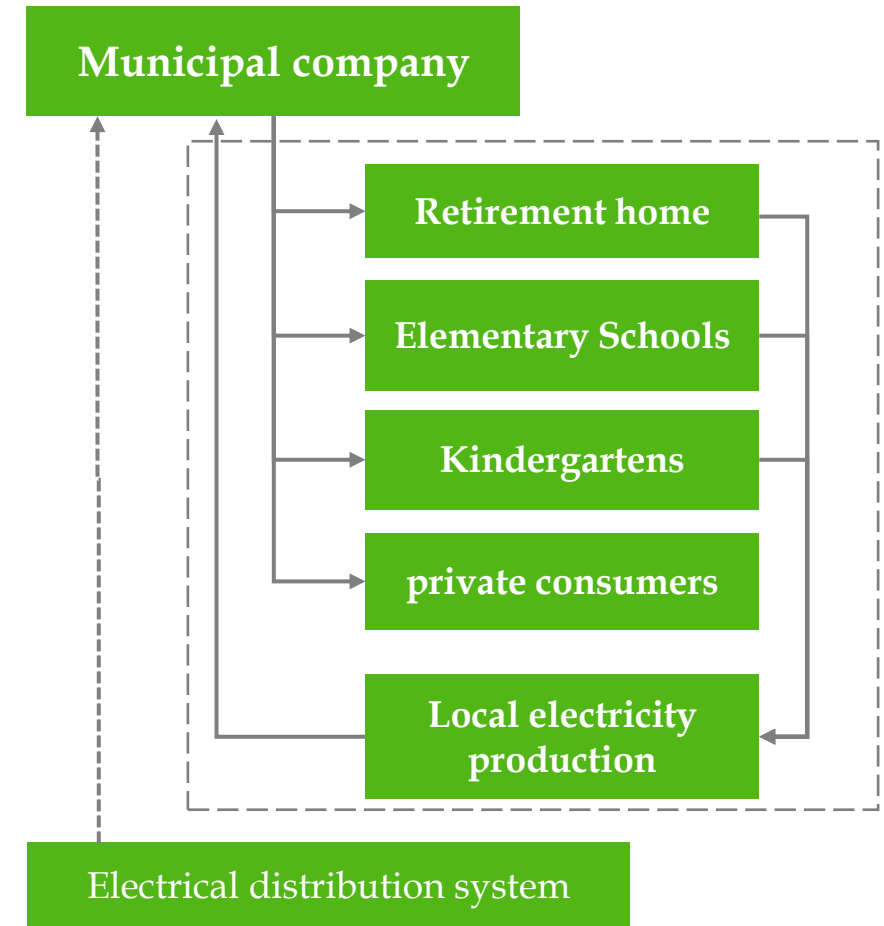
- Installed power 1 126 kWp
- Expected production 1063MWh
- Own consumption 491 MWh*



THE FOLLOW UP STEPS

- ❑ PV plant installation – **2024**
- ❑ Creating an energy community within these 10 buildings
 - municipal contributory organization for energy management – **2025**
- ❑ Extension of the energy community
 - Involvement of private consumers in the energy economy - **2026**
 - Installation of new PV power plants - **2026**

Design of power supply system:



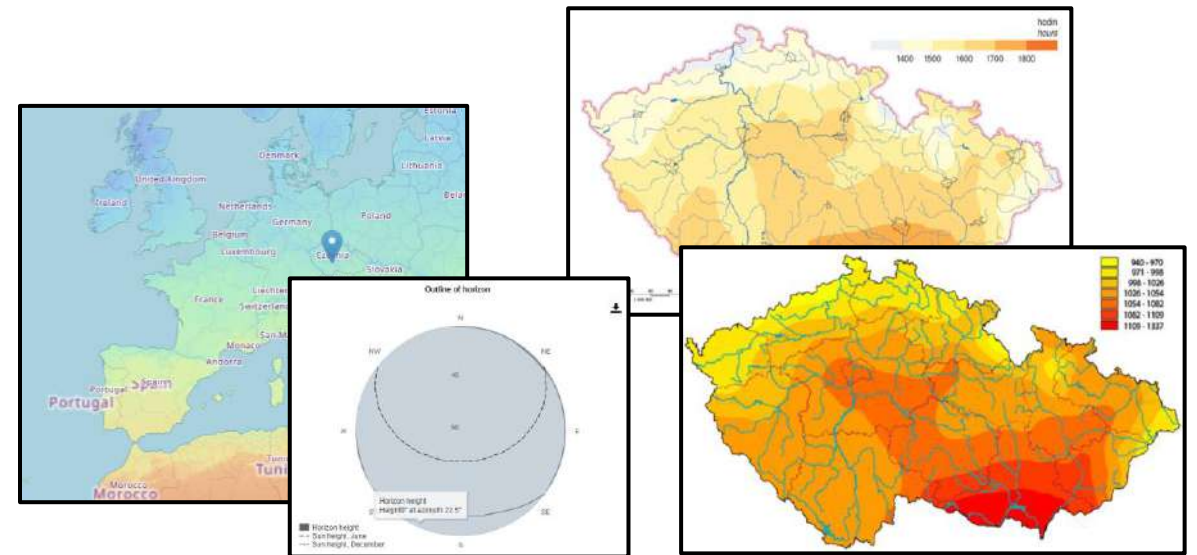
FEASIBILITY STUDY - ČESKÉ BUDĚJOVICE

Electricity generation from PV

- Evaluation of each building
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 - Orientation, Slope

Optimization based on the energy needs of the building

- Considering types of PV panels
- Accounting for PV panel efficiency

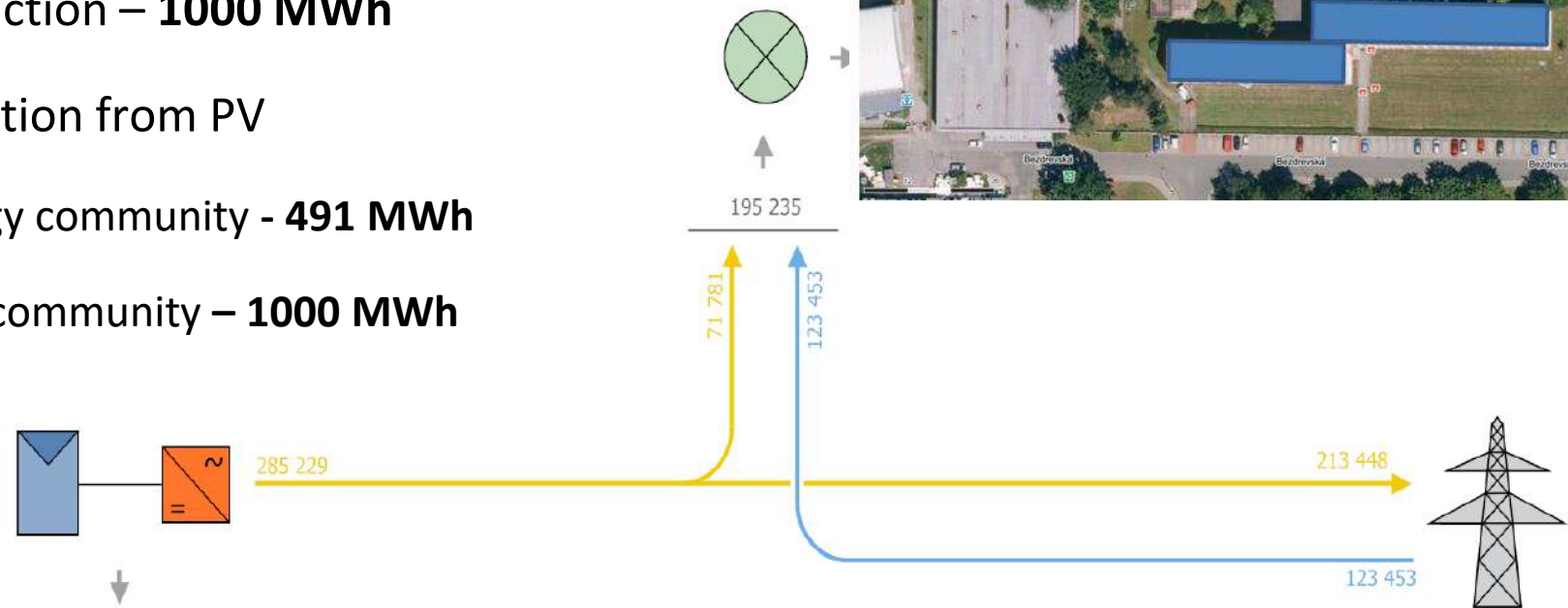
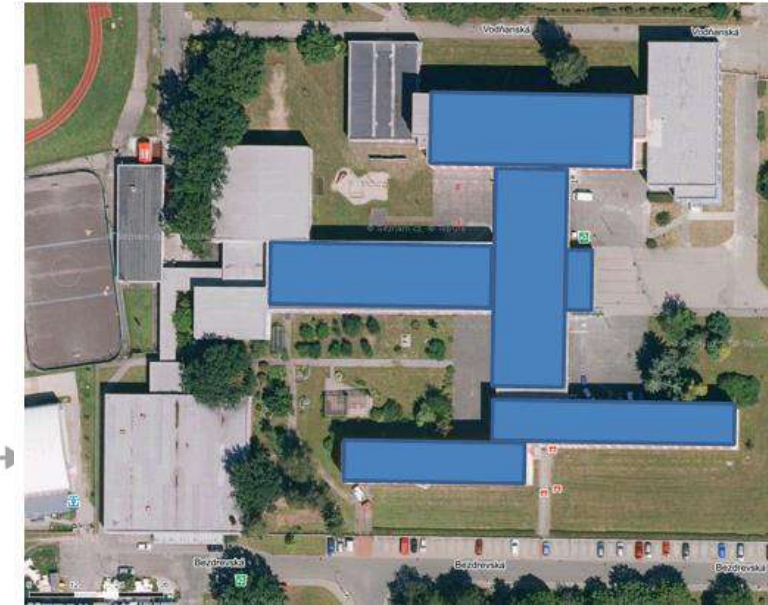


Calculation of electricity generation potential:

FEASIBILITY STUDY - ČESKÉ BUDĚJOVICE

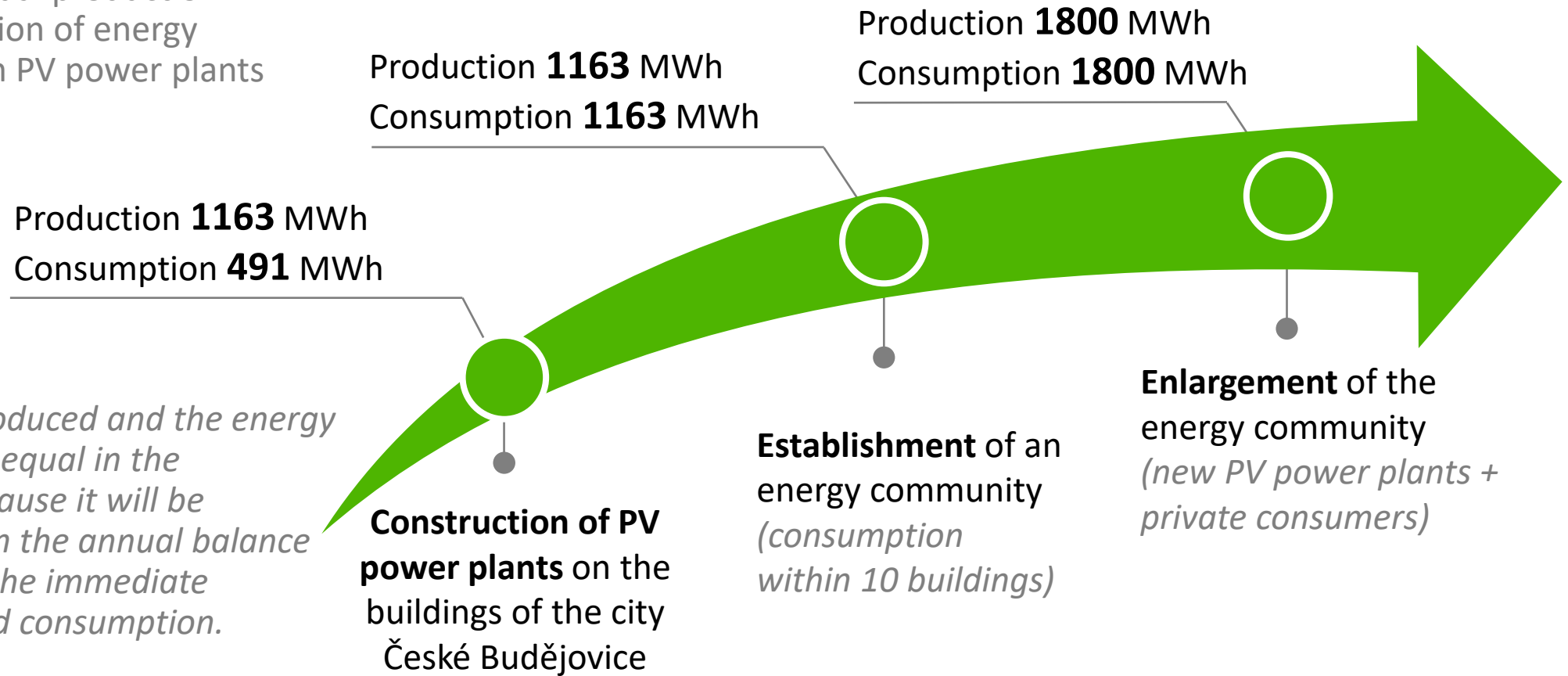
Installed power PVE

- ❑ Total consumption of all 10 buildings – **2000MWh**
- ❑ Estimated PV production – **1000 MWh**
- ❑ Estimated consumption from PV
 - ❑ without an energy community - **491 MWh**
 - ❑ with the energy community – **1000 MWh**



LONG-TERM VISION OF ECS CONCEPT IN ČESKÉ BUDĚJOVICE

Estimated annual production and consumption of energy produced from PV power plants



The energy produced and the energy consumed are equal in the estimates, because it will be evaluated from the annual balance and not from the immediate production and consumption.

Construction of PV power plants on the buildings of the city České Budějovice

Establishment of an energy community (consumption within 10 buildings)

Enlargement of the energy community (new PV power plants + private consumers)

PERSPECTIVES FROM THE CZECH REPUBLIC

CURRENT EVENTS IN LEGISLATION



AMENDING ENERGY ACT

- ❑ **SEVEn, jointly with CZ Chamber for RES**, was involved in developing a proposal for the **Energy Act amendments**, containing a full implementation of the RES II and EMD Directives
- ❑ **Amendment is supposed finally to come into force from January 1, 2024**
- ❑ **CZ Energy Regulation Office** has issued a **new decree on the Electricity Market Rules**, which applies from **January 1, 2023**
- ❑ **The decree** enables the **distribution of electricity produced in an apartment building** between customers
- ❑ Electricity produced for self-consumption **is released from commercial and regulated fees** based on MWh



THANK YOU FOR YOUR ATTENTION

Jiří Karásek, senior consultant, SEVEn
jiri.karasek@svn.cz

Continuation: Own Your SECAP

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Sídlo / Main Address:

Americká 17, 120 00 Praha 2, Czech Republic
 phone: +420 224 252 115 / fax: +420 224 247 597

Pobočka / Regional branch:

Žižkova 12, 370 01 České Budějovice, Czech Republic
 phone: +420 386 350 443 / fax: +420 386 350 370

E-mail: seven@svn.cz

Internet: www.svn.cz

