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Coordinator of the Energy

Management Office

City Hall of Bydgoszcz

Sliven, september 2019



**Covenant of Mayors
for Climate & Energy**



energycities
WHERE ACTION & VISION MEET

www.bydgoszcz.pl

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Good news

Cities function as economic engines, accounting for more than

80% of global gross domestic product (GDP)



Bad news



Cities consume over **two-thirds** of the world's energy,

and account for



over 70% of global CO2 emissions.

Establishment of the Energy Management Office



- ✓ the position of an Energy Manager was established in the city structure of Bydgoszcz in 2013.



- ✓ participation in international projects such as CitiEnGov and Energy@school from the INTERREG Central Europe programme resulted in the establishment of the Energy Management Office in 2016 which currently consists of 5 employees.



CitiEnGov



ENERGY@SCHOOL



Energy Optimization and behaviour change into school in Central Europe

Transition of EU cities towards a new concept of Smart Life and Economy

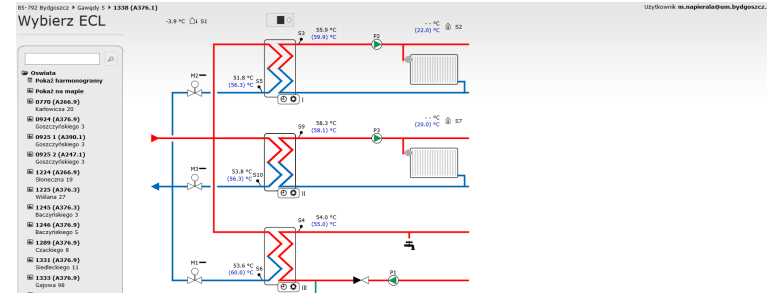
Cities for a Good Energy Governance

Establishment of the Energy Management Office



Main responsibilities of the Office:

- ✓ organizing tenders for a group purchase of electricity and gas for the „Bydgoszcz Procurement Group” (Bydgoszcz + other regional municipalities)
- ✓ contracting the supply for heating, electricity and gas
- ✓ analyzing the energy demand of municipal buildings, in order to properly select the tariffs and optimize Energy consumption
- ✓ Implementing heating management system in municipal buildings
- ✓ increasing the share of Renewable Energy Sources in the City
- ✓ establishing an Energy Database
- ✓ participation in EU and other international programmes and projects in the field of Energy Efficiency and Environmental Protection
- ✓ Participation and hosting events, conferences regarding EE, RES and E-mobility issues



E-mobility, Energy efficiency, RES events & conferences



Energy Database



Is a web application enabling monitoring and processing of data on media consumption costs, including electricity, heat, gas and water. The application allows to identify adverse media consumption trends, track incident events and take steps towards achieving financial savings.

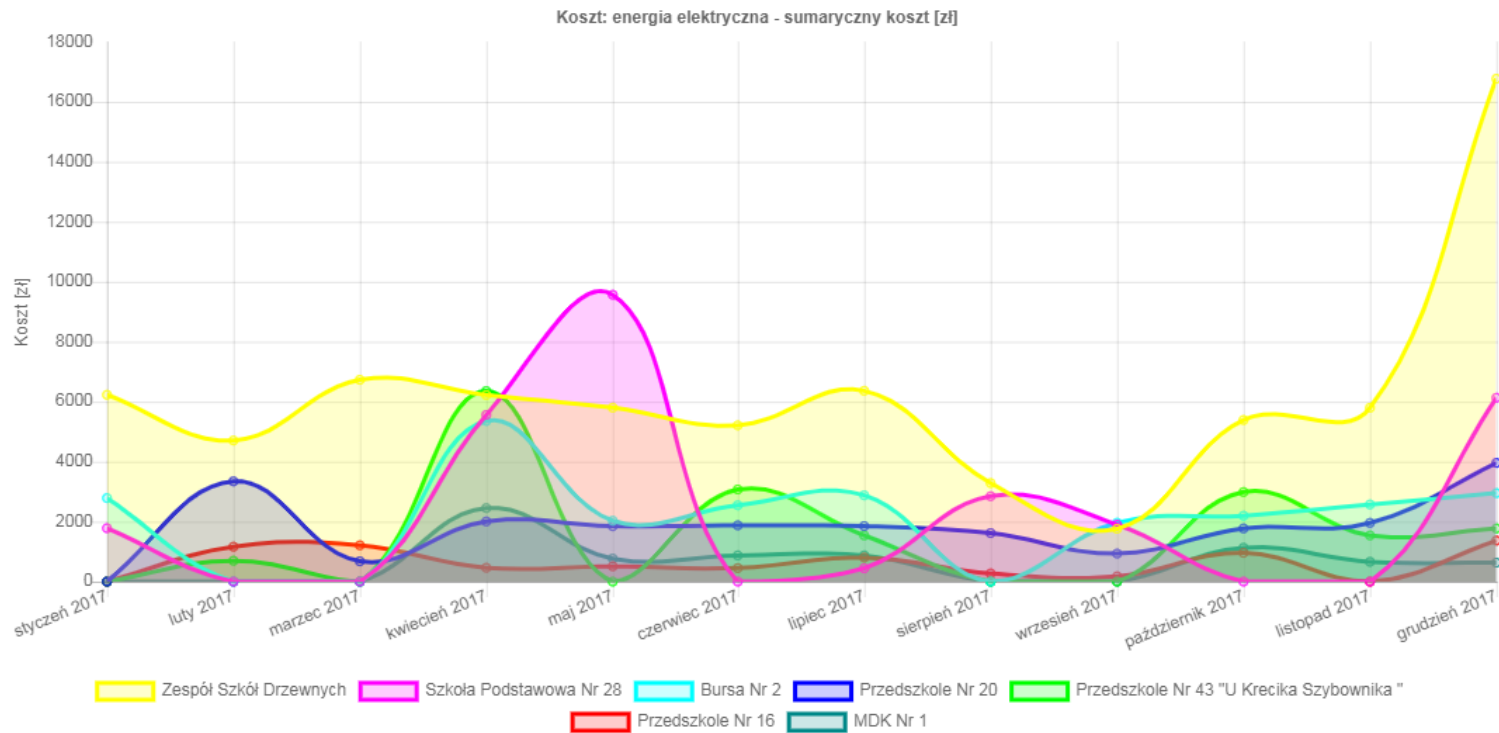
The main feature of the application is to calculate, forecast and create databases of costs and volumes of media consumption in periods. The application allows to import data from municipal entities, generate various lists and reports.

Lp.	Municipal Entities	§ 426					
		2016	2017r.				
			Thermal Energy	Electricity	Natural Gas	Water	total
	the sum of expenses and planned expenses	61 320 164,19	28 848 122,33	24 880 613,33	2 547 157,94	6 669 242,71	62 945 136,31
1	Administracja Domów Miejskich Sp. z o.o	15 178 596,51	10 090 734,39	720 739,44	146 947,62	4 492 726,64	15 451 148,09
2	BORPA	82 588,26	67 962,34	14 313,90	0,00	5 065,70	87 341,94
3	Bydgoski Zespół Placówek Opiekuńczo - Wychowawczych	0,00	231 062,88	62 353,17	20 403,90	30 687,47	344 507,42
4	Bydgoskie Biuro Finansów Oświaty	46 919,78	84 404,01	85 085,17	0,00	9 590,47	179 079,65
5	Bydgoskie Centrum Informacji	9 755,45	5 585,55	5 648,84	0,00	393,73	11 628,12
6	HSW „Łuczniczka”	1 515 665,25	740 337,24	701 048,08	0,00	76 494,18	1 517 879,50
7	Jednostki oświatowe	23 695 656,66	15 400 526,92	5 246 681,39	2 053 381,00	1 631 338,43	24 331 927,74
8	Komenda Miejska Państwowej Straży Pożarnej	380 993,35	151 067,23	86 620,93	94 202,52	18 121,35	350 012,03
9	Miejska Pracownia Geodezyjna	43 035,67	22 235,75	16 019,50	0,00	6 797,32	45 052,57
10	Miejska Pracownia Urbanistyczna	49 025,39	21 239,52	25 467,78	0,00	4 170,82	50 878,12
11	Miejski Ośrodek Pomocy Społecznej	1 582 857,29	146 454,92	113 817,38	4 790,19	43 795,71	308 858,20
12	Powiatowy Inspektorat Nadzoru Budowlanego	0,00	0,00	0,00	0,00	0,00	0,00
13	Powiatowy Urząd Pracy	161 501,79	129 331,98	25 754,92	0,00	8 633,76	163 720,66
14	Schronisko dla Zwierząt	51 495,31	24 168,25	22 380,22	0,00	7 443,06	53 991,53
15	Straż Miejska	114 951,23	21 504,53	35 843,85	46 122,85	13 433,76	116 904,99
16	Zakład Pielęgnacyjno – Opiekuńczy	32 131,83	0,00	19 470,24	3 469,83	5 413,06	28 353,13
17	Zarząd Dróg Miejskich i Komunikacji Publicznej	16 065 885,51	116 347,47	16 455 260,46	0,00	13 914,16	16 585 522,09
18	Zespół Domów Pomocy Społecznej i Ośrodków Wsparcia	0,00	451 842,41	257 150,26	107 379,12	120 013,53	936 385,32
19	Zespół Żłobków Miejskich	546 418,91	292 445,85	146 170,33	61 774,39	43 330,71	543 721,28
20	Urząd Miasta - WOA	1 578 324,68	850 871,09	704 767,92	6 515,12	73 577,32	1 635 731,45
21	Urząd Miasta -Wydział Informatyki	2 387,14	0,00	2 403,29	0,00	0,00	2 403,29
22	Urząd Miasta -Wydział Zarządzania Kryzysowego	21 074,43	0,00	23 017,84	0,00	0,00	23 017,84
23	Urząd Miasta -Wydział Gospodarki Komunalnej (fontanny)	149 004,93	0,00	101 240,36	2 171,40	64 301,53	167 713,29
24	Urząd Miasta -Biuro Promocji Miasta i Współpracy z Zagranicą	4 178,52	0,00	2 655,08	0,00	0,00	2 655,08
25	Urząd Miasta -Wydział Mienia i Geodezji	0,00	0,00	847,67	0,00	0,00	847,67
26	Urząd Miasta -ZIT	7 557,82	0,00	5 512,92	0,00	0,00	5 512,92
27	Urząd Miasta -Rady osiedli	158,48	0	342,39	0	0	342,39
	wydatki pozabudżetowe RDO	2 255 333,55	914 202,43	714 586,86	41 661,05	288 052,20	1 958 502,54
	wydatki łącznie (budżet +RDO)	63 575 497,74	29 762 324,76	25 595 200,19	2 588 818,99	6 957 294,91	64 903 638,85

Energy Database charts



- MENU GŁÓWNE
- Start
- Obiekty
- Raporty
- Wizualizacje**
- Katalogi
- Ustawienia
- Użytkownicy
- Log
- Import danych
- Pomoc



Heating Management Application

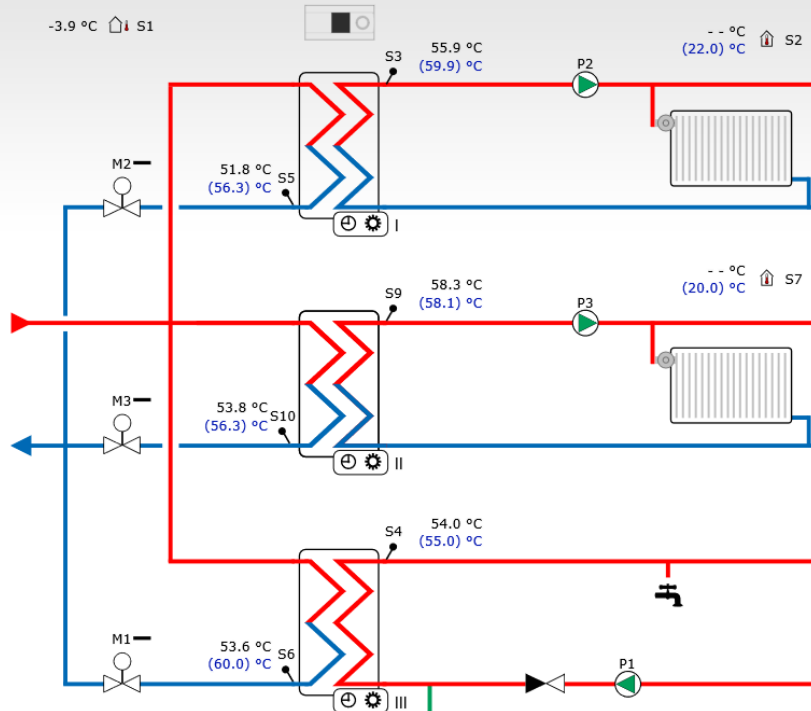


Greater energy efficiency is obtained thanks to weather regulation, temperature variations according to the schedule. The application also allows the user to optimize energy consumption due to restrictions: return temperature, flow, power.

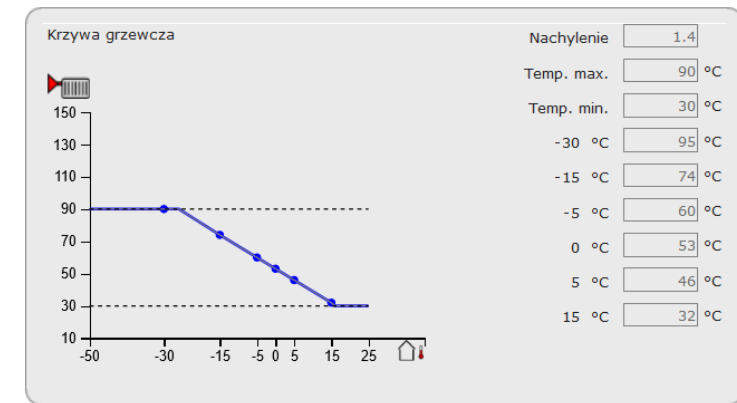
85-792 Bydgoszcz ▶ Gawędy 5 ▶ 1338 (A376.1)

Wybierz ECL

- Oswiata
- Pokaż harmonogramy
- Pokaż na mapie
- 0770 (A266.9) Karłowicza 20
 - 0924 (A376.9) Goszczyńskiego 3
 - 0925 1 (A390.1) Goszczyńskiego 3
 - 0925 2 (A247.1) Goszczyńskiego 3
 - 1224 (A266.9) Słoneczna 19
 - 1225 (A376.3) Wiślana 27
 - 1245 (A376.3) Baczyńskiego 3
 - 1246 (A376.9) Baczyńskiego 5
 - 1289 (A376.9) Czackiego 8
 - 1331 (A376.9) Siedleckiego 11
 - 1333 (A376.9) Gajowa 98



Obieg 1, ogrzewanie - Temp. zasilania



Obieg 1, ogrzewanie - Ustaw. podst.

<p>Tryb</p> <p>Wg.harmono.</p> <p>Wg.harmono.</p> <p>Zapisz</p>	<p>Tkorf. wymag.</p> <p>22.0 °C</p> <p>5.0 °C 40.0 °C</p> <p>Zapisz</p>	<p>Toszcz. wymag.</p> <p>17.0 °C</p> <p>5.0 °C 40.0 °C</p> <p>Zapisz</p>
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ACTIONS- PPP

Retrofitting of schools

- ✓ Reduction of heat energy consumption by 50%
- ✓ Reduction of electricity consumption by 40%



Investments in Renewable Energy Sources (RES)

37 installations on 37 buildings - 500 KW (2020)

25% of the building's energy demand covered

Complex of High School No. 4 in Bydgoszcz IV High School



Investments in Renewable Energy Sources (RES)

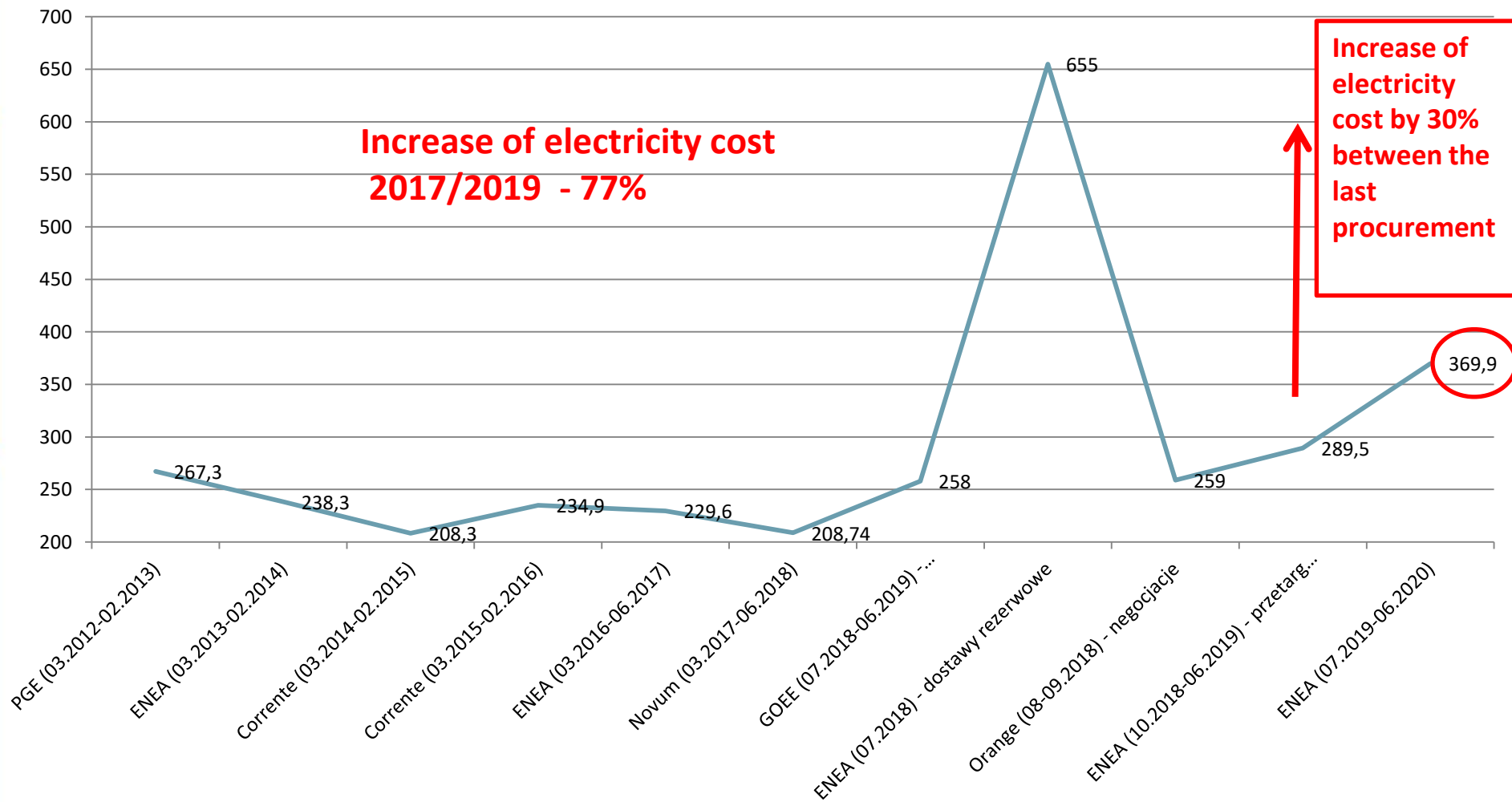
swimming pools, schools, gyms

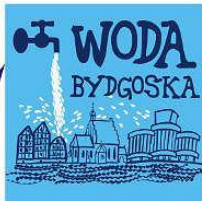


Panorama of the City from the Town Hall Building ul. Grudziadzka



Cost of electricity for City of Bydgoszcz across the years 2012-2020





ACTIONS



The first biogas plant and the production of energy in cogeneration with the heating capacity of 0.5 MW and the electricity production capacity of 2.5 GWh was created already in 2005 at the sewage treatment plant.



Next steps



3 cogeneration gas plants each with the energy capacity of 2MW
18 GWh/year -20% City's demand



Modernization and construction of new heating networks in the area of the City enabling the use of thermal energy generated under high-efficiency cogeneration conditions.



Increasing the energy efficiency through the reconstruction and thermal retrofitting of the heating network in the city of Bydgoszcz



Next steps



Existing since 2016, waste to energy incinerator plant at ZTPO Pronatura, with installed capacity of 30 MW.
60 GWh / year of electricity -65% of the city's demand



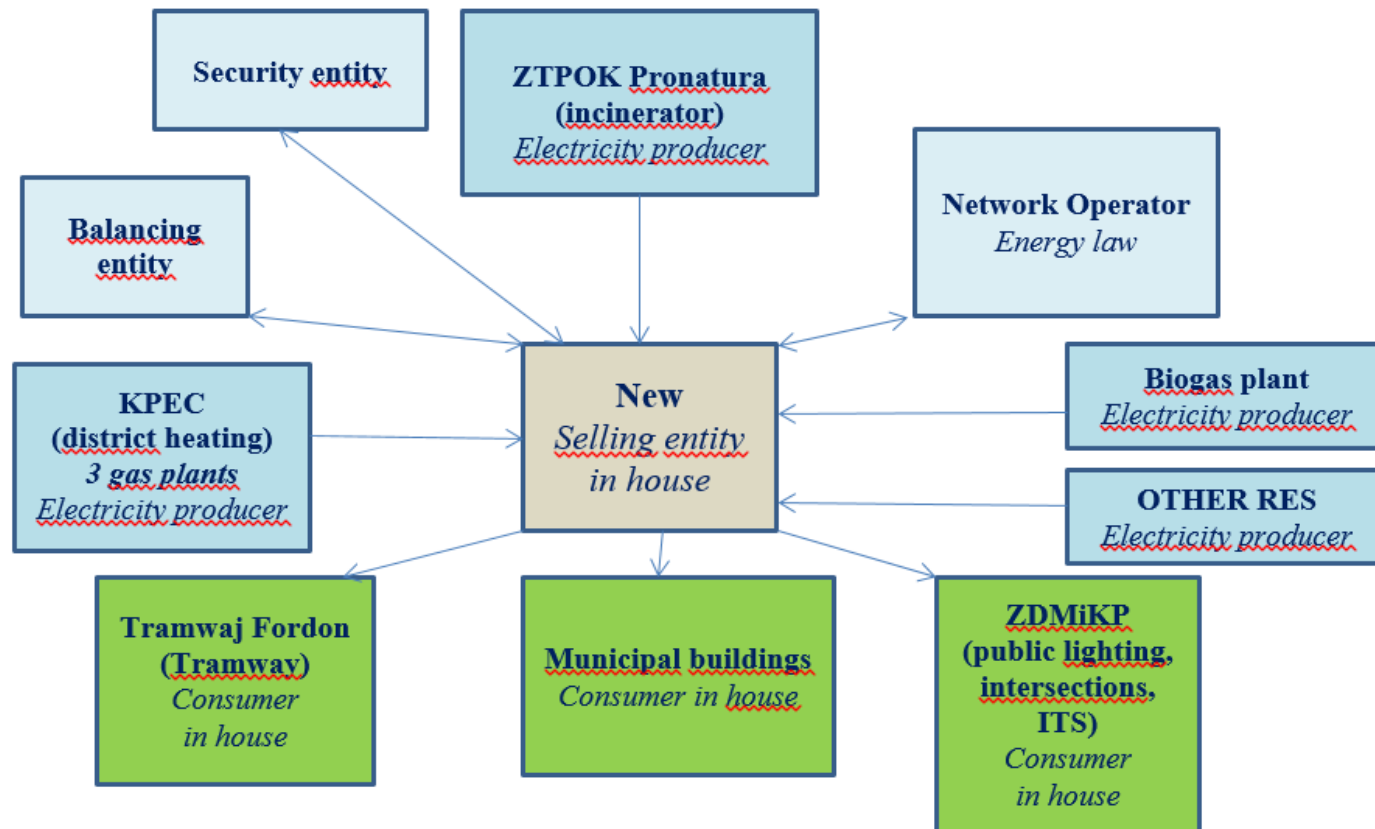
Planned – 2023, Biogas plant at ZTPO Pronatura, with installed capacity of 4 MW
26 GWh / year - 30% of the city's demand
PPP



Energy self-sufficient City of Bydgoszcz

„in house” model NEW entity

A new entity - electricity seller for the organizational units of the City of Bydgoszcz

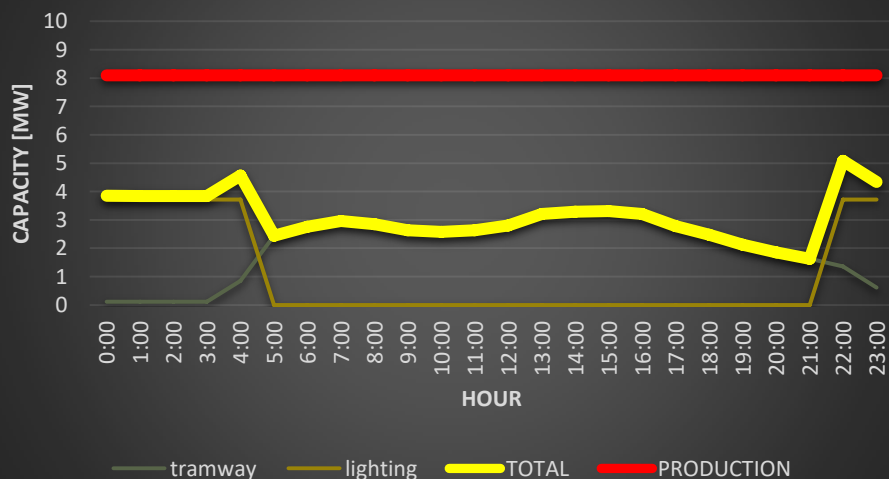


Balancing electricity in the project

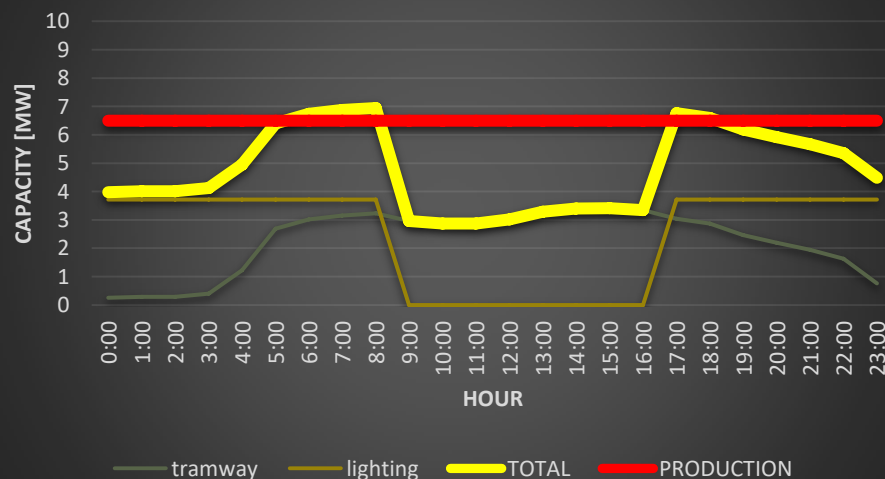


- ➡ The missing energy will be purchased on the balancing market, however the final decision as to how the transaction will be secured will be made after a detailed analysis including the actual energy production in the hourly system and the anticipated technological shutdown in September,
- ➡ The surplus energy will be sold on the balancing market or another - alternative market, however the final decision as to how the transaction will be secured will be made after detailed analysis taking into account the actual hourly energy production and anticipated shutdown in September.

JUNE



DECEMBER



First step... PPP

to illuminate the city with its own electricity and modern lamps



Sebastian Sitarek
Photography



Let's meet in Bydgoszcz!

