

OD PASIVNIH POTROŠAČA DO AKTIVNIH SUDIONIKA

ULOGA KRAJNJIH KORISNIKA U ENERGETSKIM
ZAJEDNICAMA

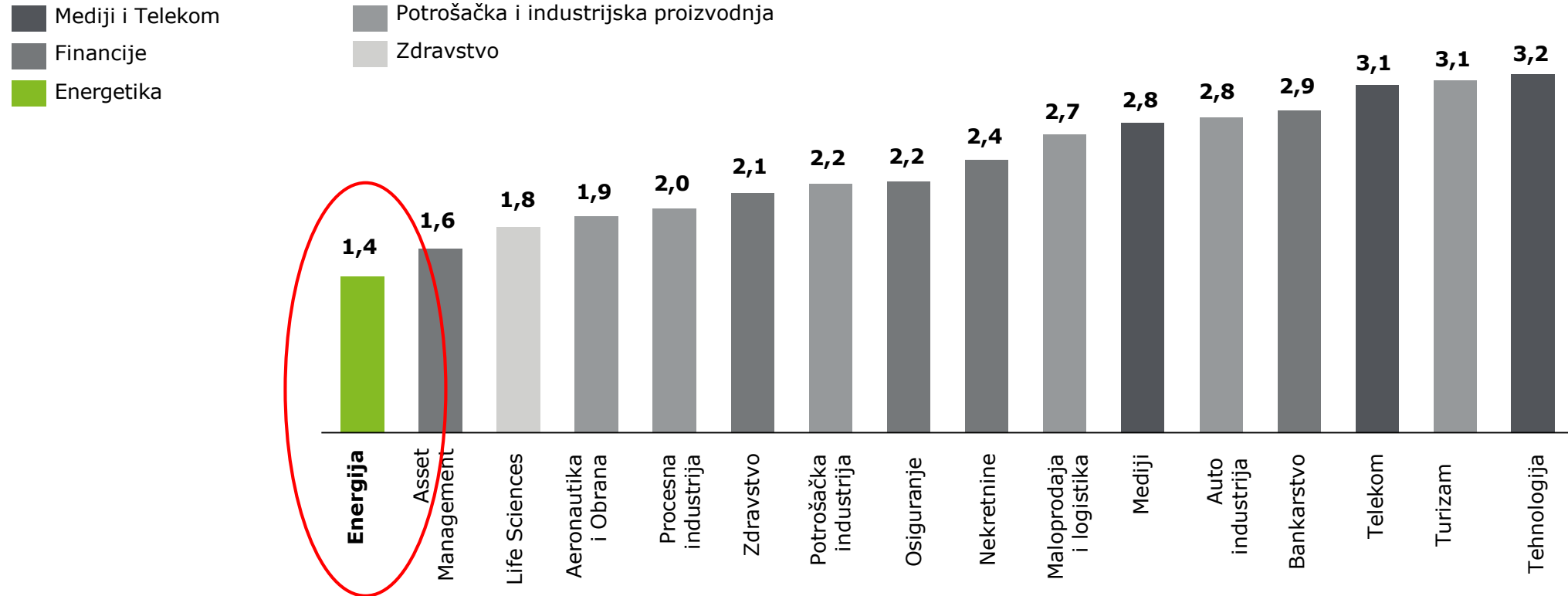
Dr. sc. Goran Jurišić

- Direktiva „Tržište EE” 2019/944
- **Direktiva „Poboljšanja modela tržišta EE” 2024/171**
- ZOTE NN 111/2021
- Zakon o izmjenama ZOTE NN 83/2023

- Direktiva „Promicanje OIE” 2018/2001
- **Izmjena direktive „Promicanje OIE” 2023/2413**
- ZOIEVK NN 138/2021
- ZOEK NN 83/2023



Prosječna digitalna zrelost u sektorima



ELEKTRIČNA VOZILA



Početni utjecaj uslijed novog tereta biti će na mrežu u visokonaseljenim područjima zbog povećanih pikova u potrošnji. EV punjenje može dovesti do smanjenja pikova u potrošnji i do 30%

UPRAVLJANJE NN MREŽOM



Sve veća potreba za priključenim i decentraliziranim obnovljivim izvorima, spremnicima energije, zajedno s potrebom za poboljšanjem pouzdanosti mreže, potiču ulaganja u nove tehnologije.

UPRAVLJANJE IMOVINOM

Kontinuirano unaprjeđenje kvalitete usluge s ciljem od nula ispada mreže



KIBERNETIČKA SIGURNOST

Uspostaviti kibernetičku sigurnost zbog prevencije upada u IT sustav koji je temelj upravljanja mrežom



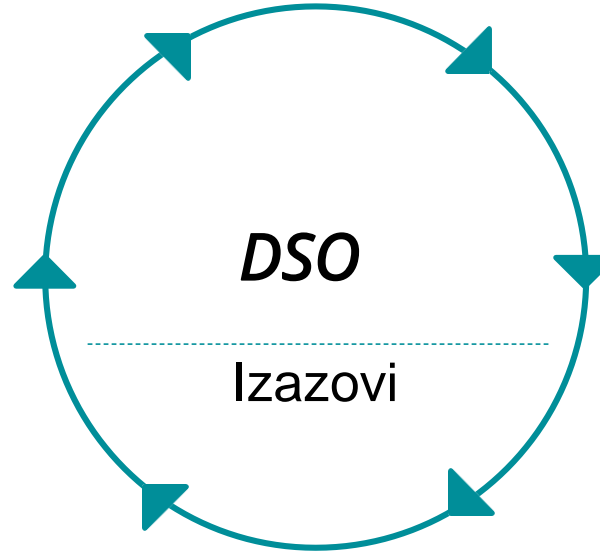
ADMINISTRACIJA

Optimiranje i efikasnost administrativnih aktivnosti je nužnost



OPTIMIRANJE RADNIH AKTIVNOSTI

S obzirom na reguliranu djelatnost, optimiranje rada je vrlo važno kako bi se smanjili operativni troškovi a povećala korisnost.



MODERNIZACIJA / UČINKOVITOST

35 - 40% opreme u TS, do 2025. biti će starije od 40 godina



SPREMNICI I FLEKSIBILNOST

Razvoj baterijskog sustava kako bi se povećala stabilnost mreže



DISTRIBUIRANI IZVORI

Zelena energetska tranzicija zahtijeva nove načine organizacije i rada kako bi se omogućila optimalno uključivanje

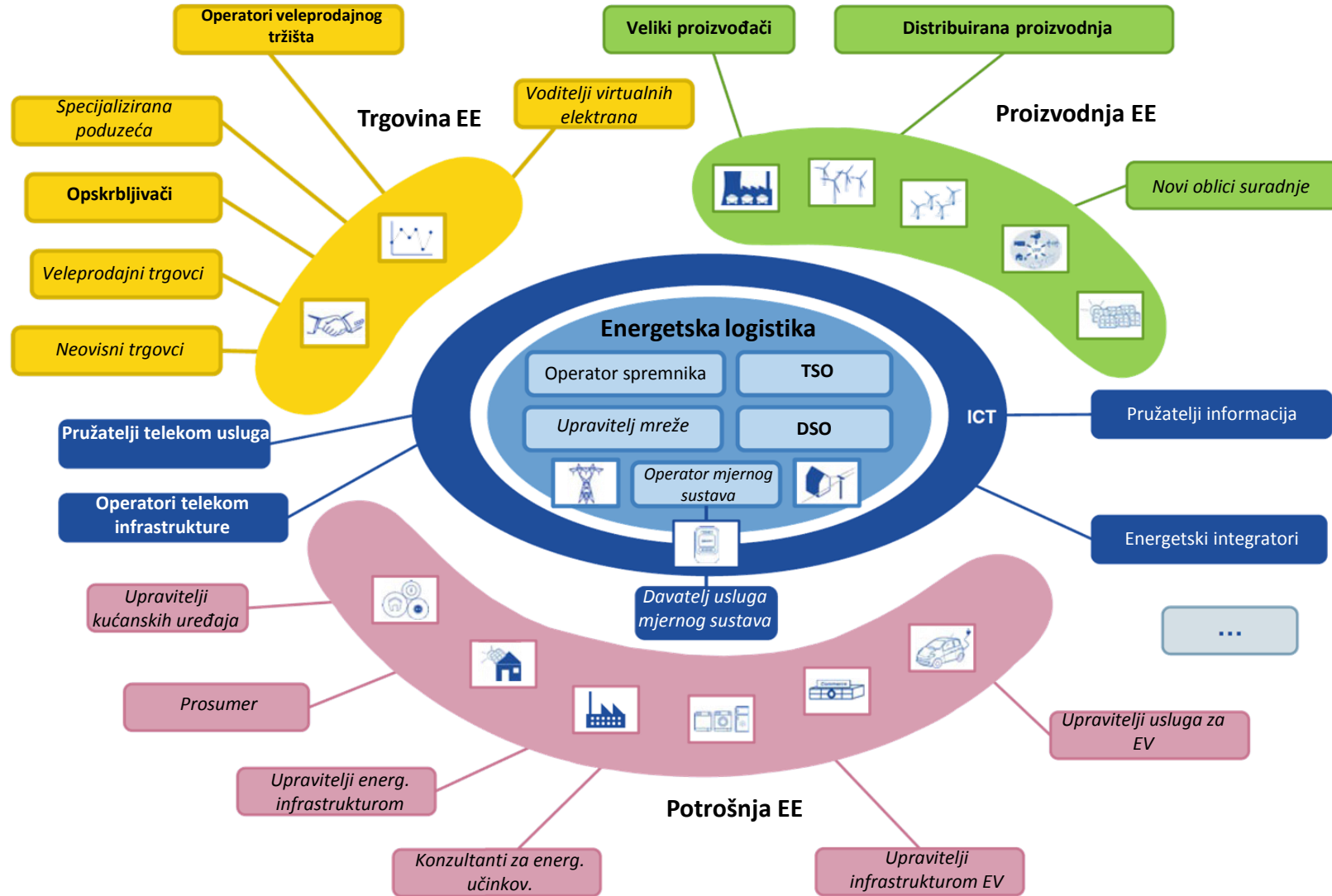


KOMUNIKACIJE

S uvođenjem elemenata naprednih mreža, komunikacije su sve važnije u elektrodistribuciji. Informacije u stvarnom vremenu postaju kritične.

AKTIVNI KUPAC U NAPREDNOJ MREŽI

Od pasivnih potrošača do aktivnih sudionika: Uloga krajnjih korisnika u energetske zajednicama



- Desetogodišnji plan razvoja distribucijske mreže HEP ODS-a*

NAPREDNA DISTRIBUCIJSKA MREŽA

- Razvoj i optimiranje konvencionalne mreže
- Automatizacija mreže
- Napredno vođenje pogona
- Napredno mjerenje

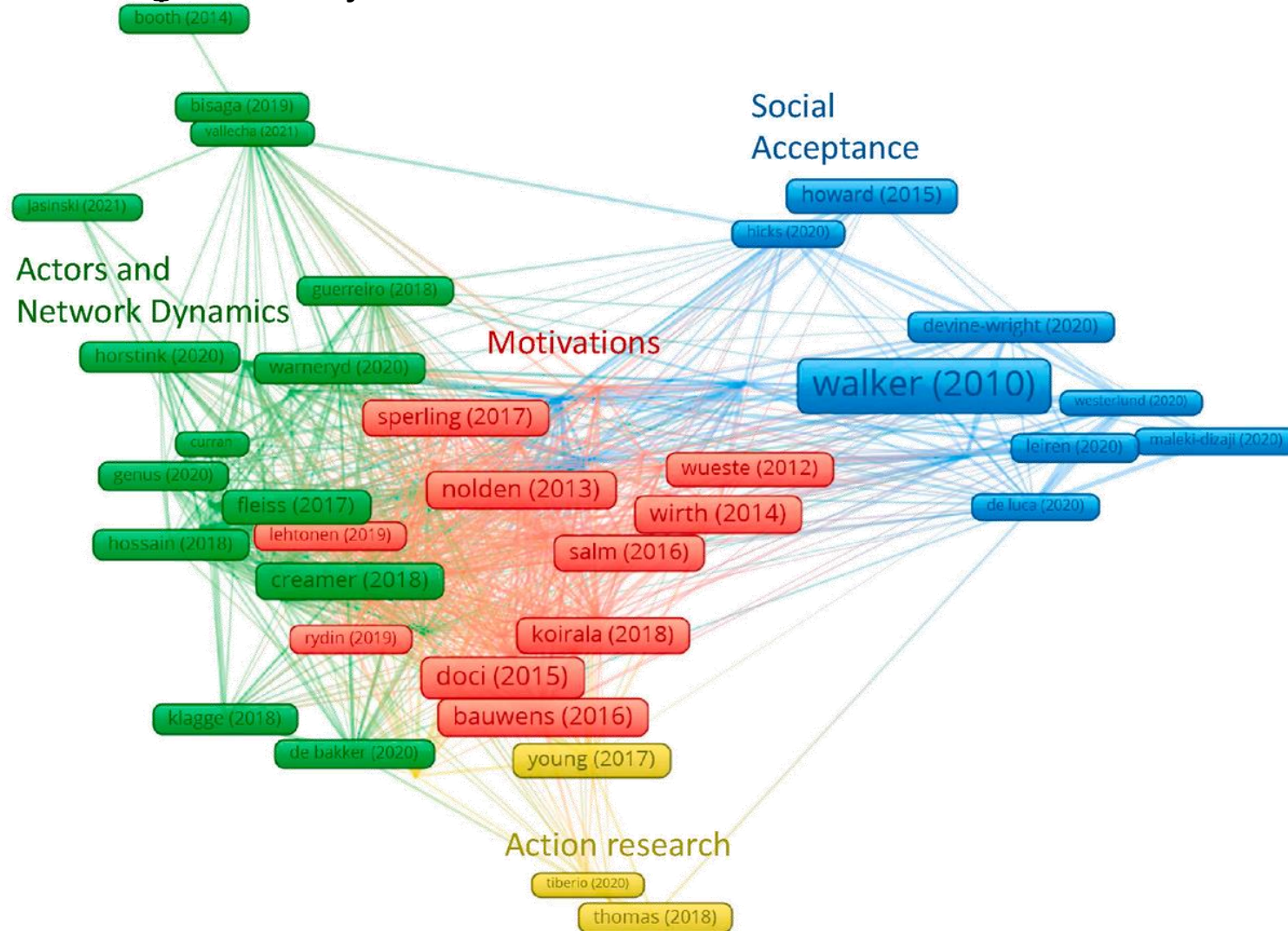
NAPREDNA INTEGRACIJA OIE

- Povećanje **sposobnosti** za prihvata OIE
- E-mobilnost
- Spremnici energije
- Energetska učinkovitost

NAPREDNE FUNKCIJE TRŽIŠTA EE

- Korisnik mreže kao aktivni sudionik tržišta EE
- Usluge fleksibilnosti
- Agregacija proizvodnje i potrošnje
- Napredno vođenje pogona
- Napredni poslovni model

- Pregled literature o Energetskim zajednicama



- Pregled literature o Energetskim zajednicama

Main aspects and relating MLP level	Codes	Factors (Nodes)
Socio-cultural (landscape)	Justice	Fairness and justice consideration as drivers for change
	Psychological factors	Sense of community, responsibility
	Cultural factors	Norms and values (e.g., equal rights, entrepreneurialism, communal values, traditions, perception of locality)
	Historical factors	History of energy cooperatives and cooperative projects Window of common opportunity (e.g., an economic crisis)
Geographic (landscape)	Physical environment and geographic location	Condition of physical environment (e.g., landscape, protected areas, biodiversity, and wildlife, urban/rural divide, availability of renewable energy sources)
		Development of other infrastructure (transport and communication)
		Closeness to RES assets
		Feasibility of RES assets
	Energy Mix	<u>Low-RES</u> ratio in energy mix

- Pregled literature o Energetskim zajednicama

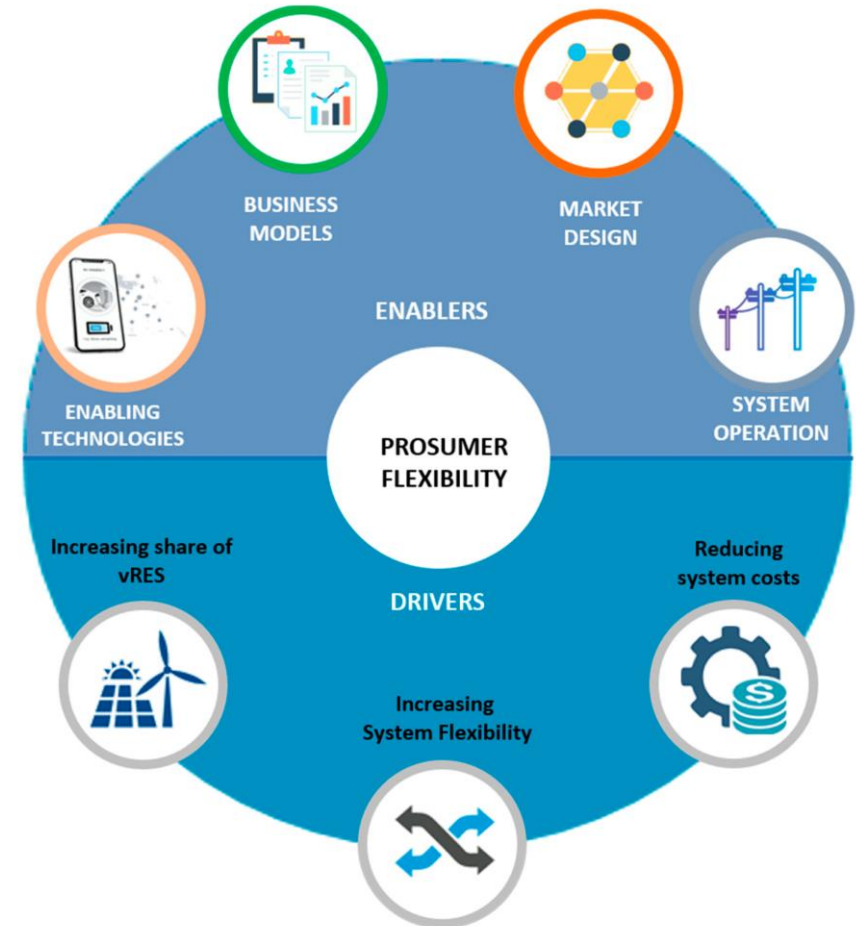
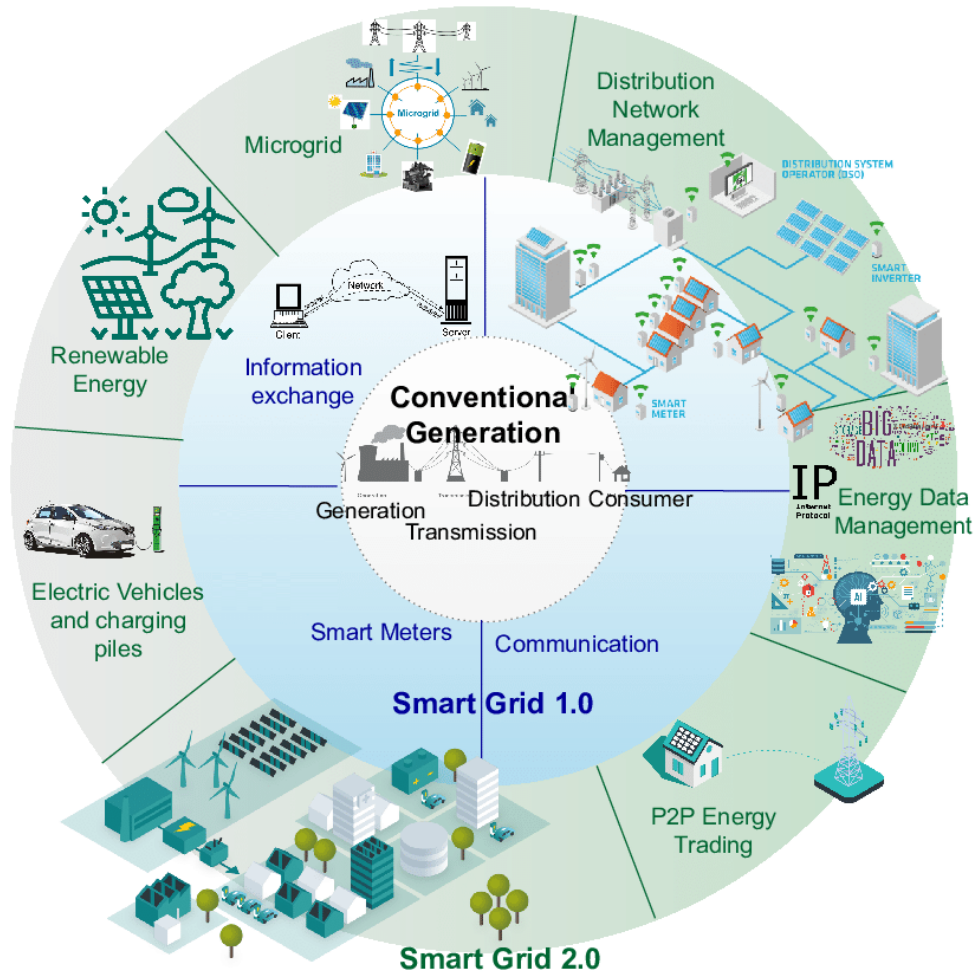
Main aspects and relating MLP level	Codes	Factors (Nodes)	
Economic and financial (regime and niche)	Local profits and income	Local jobs, improvement of local economy	
	Costs	Declining costs of (RES) technology	
	Market Conditions	(Local) economic crisis	
		Re-municipalization trends, active local utilities, presence of generation-based industry	
		Openness of the energy market (influenced by monopolies and regulation) and stability of the market	
		Market acceptance of ECs (influenced by incumbents, investors, tariff structures),	
	Financing	Availability of and access to a diverse source of funding and financing on different regional and institutional levels to different stakeholders (by government, community investments, bank loans to communities and the public)	
		Availability of supportive tax schemes (tax subsidies for RES, tax incentives)	
		Appropriate tariff structures (e.g., social tariffs, feed-in-tariffs)	
		Appropriate funding and financing options according to the project development phase: First phase regional support, loan schemes, second phase: soft loans and grants, third phase Feed-in-tariffs, feed-in-premiums, local ownership criteria, access to technical knowledge and advice, quota-based auctioning	

Main aspects and relating MLP level	Codes	Factors (Nodes)	
Institutional (regime)	Policy	EC emergence, development and success are depending on suitable, and consistent policies (financial support schemes, environmental regulations)	
	Laws	A reliable legal framework (e.g., rules on grid connection, rules on cooperative entities, regulations on feed-in)	
	Innovation	Institutional settings that foster innovative projects and policies (e.g., change management, adaptable governance approaches, space for experimentation)	
	Research and development	Support and funding of research institutions	
	Support	Support of governments, non-governmental and international institutions (e.g., supporting RES, subsidies, energy initiatives)	
		Support specific for local projects and initiatives	
		Guidelines and point of contact to understand current legislation, facilitation, and coordination of development process	
	Planning and Permission	Resources (knowledge, time, money) needed for permission and planning processes	
	Transparency and information	Access to information and transparency of permission process	
	Fossil fuel incumbents	Degree of embeddedness and lobbying power of established regimes (e.g., fossil fuel incumbents)	
Public discourse	Public discourse on RES		

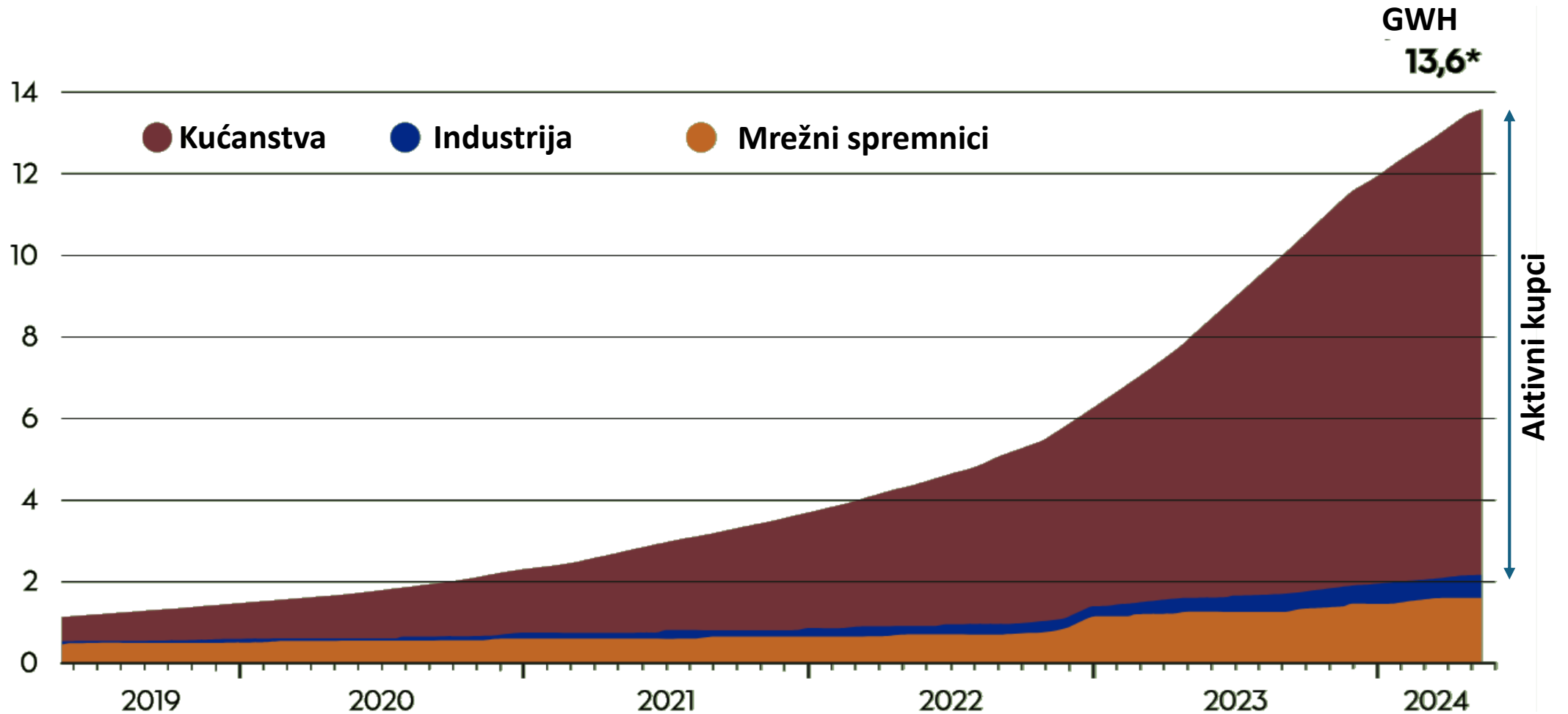
- Pregled literature o Energetskim zajednicama

Main aspects and relating MLP level	Codes	Factors (Nodes)
Technical (landscape and regime)	Infrastructure	Grid infrastructure (e.g., unbundling of generation, transmission, and distribution)
		Availability of other infrastructure (transport and communication)
		Availability of data, availability of technology
	Sizing and assessment of feasibility	
Consideration of different energy vectors as well as socio-technical aspects		

- Pregled literature o Energetskim zajednicama



- Kapaciteti baterijskih sustava u Njemačkoj



- Zakon o tržištu električne energije -> Data is key



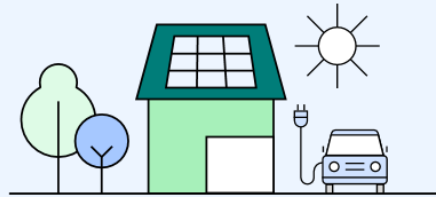
Sustav naprednog mjerenja uvodi ministar odlukom, u skladu s europskim normama i sljedećim zahtjevima ...

- Nepotvrđeni podaci o potrošnji u **gotovo stvarnom vremenu** također su lako i na siguran način **dostupni krajnjem kupcu bez dodatnih troškova**, putem standardiziranog sučelja ili putem daljinskog pristupa **radi** podupiranja automatiziranih programa energetske učinkovitosti, **upravljanja potrošnjom** i drugih usluga

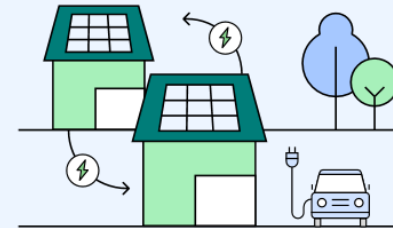


- EU smjernice za energetske zajednice

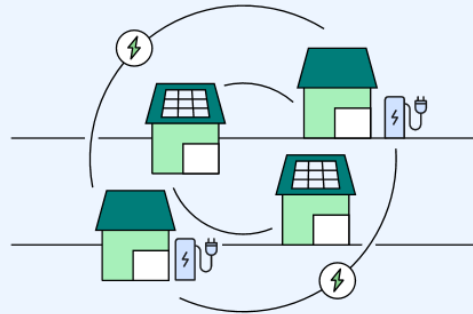
1 Potrošač vlastite obnovljive energije



2 Skupina krajnjih kupaca



3 Zajednica obnovljive energije

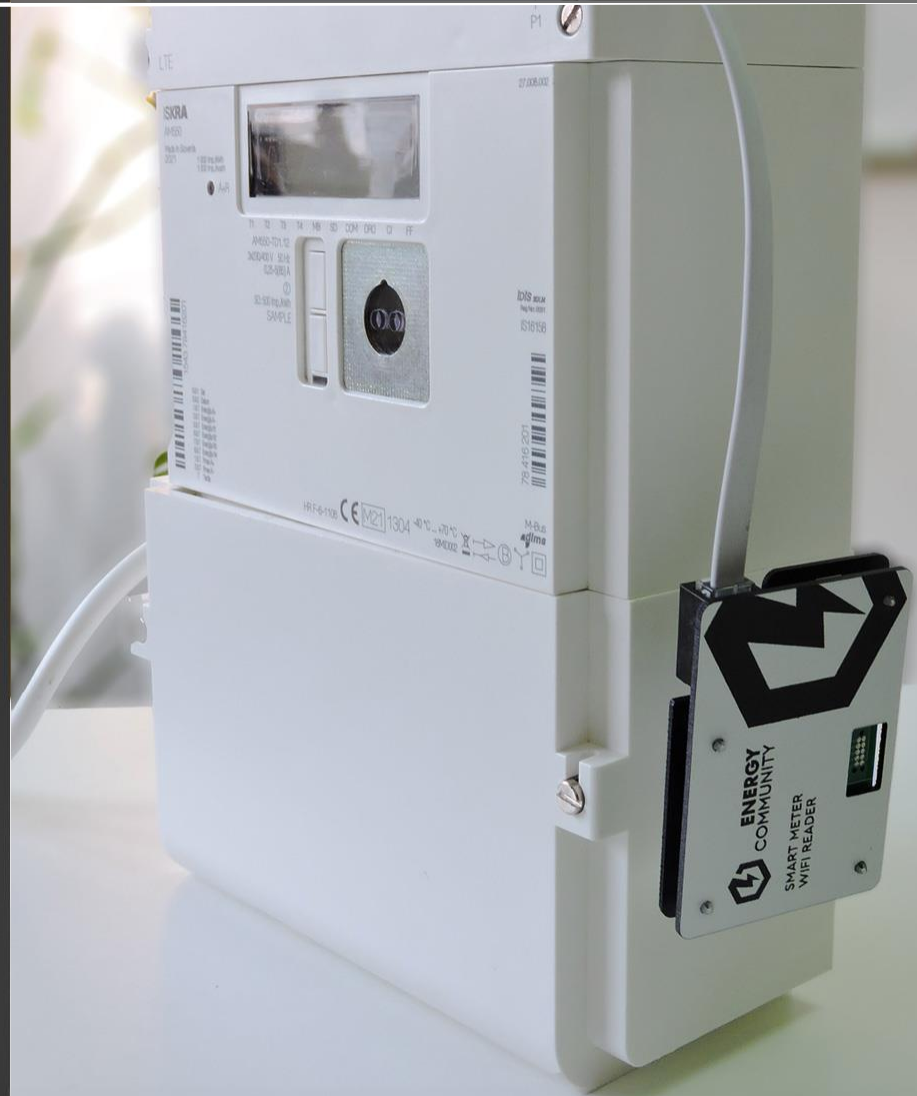
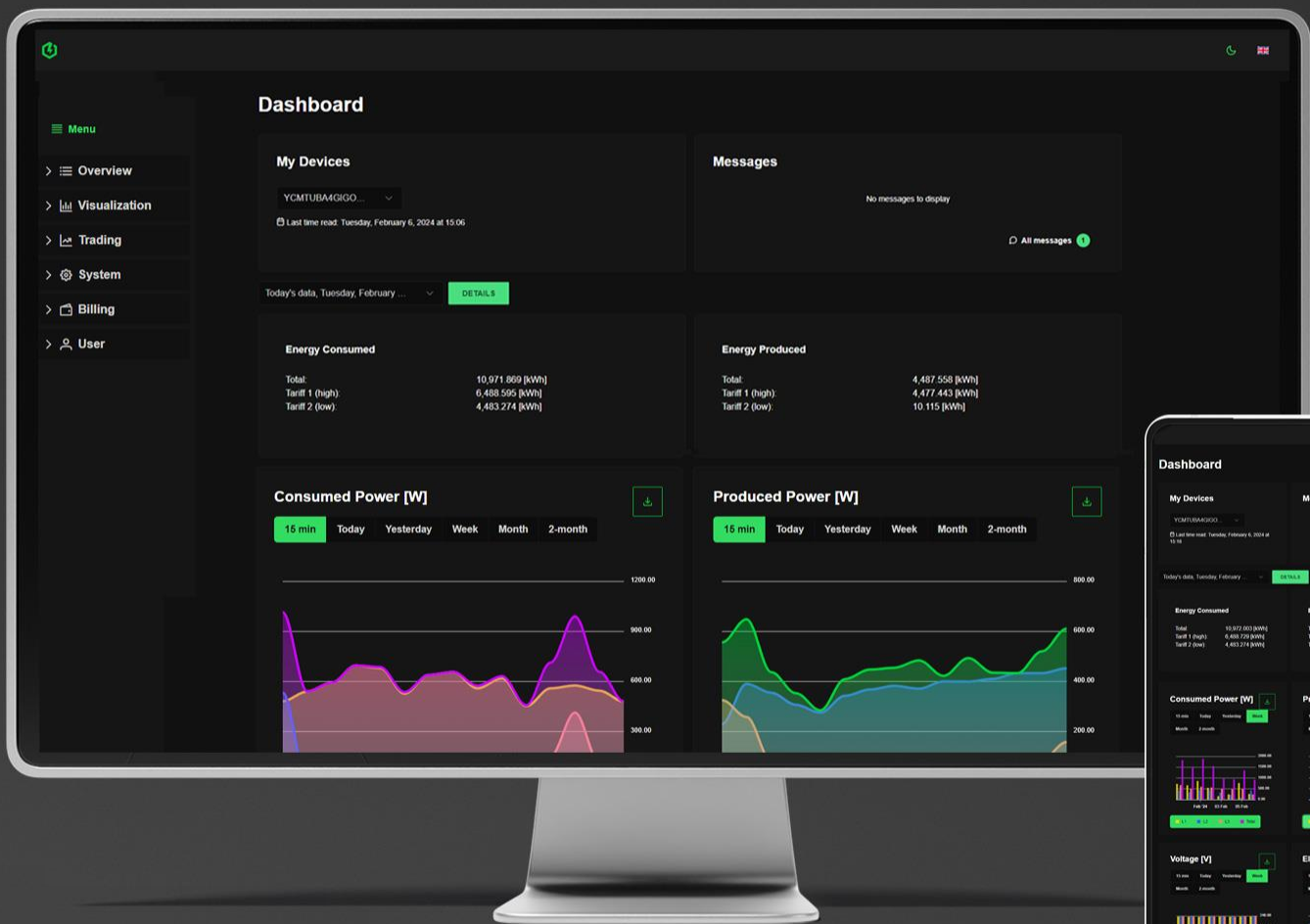


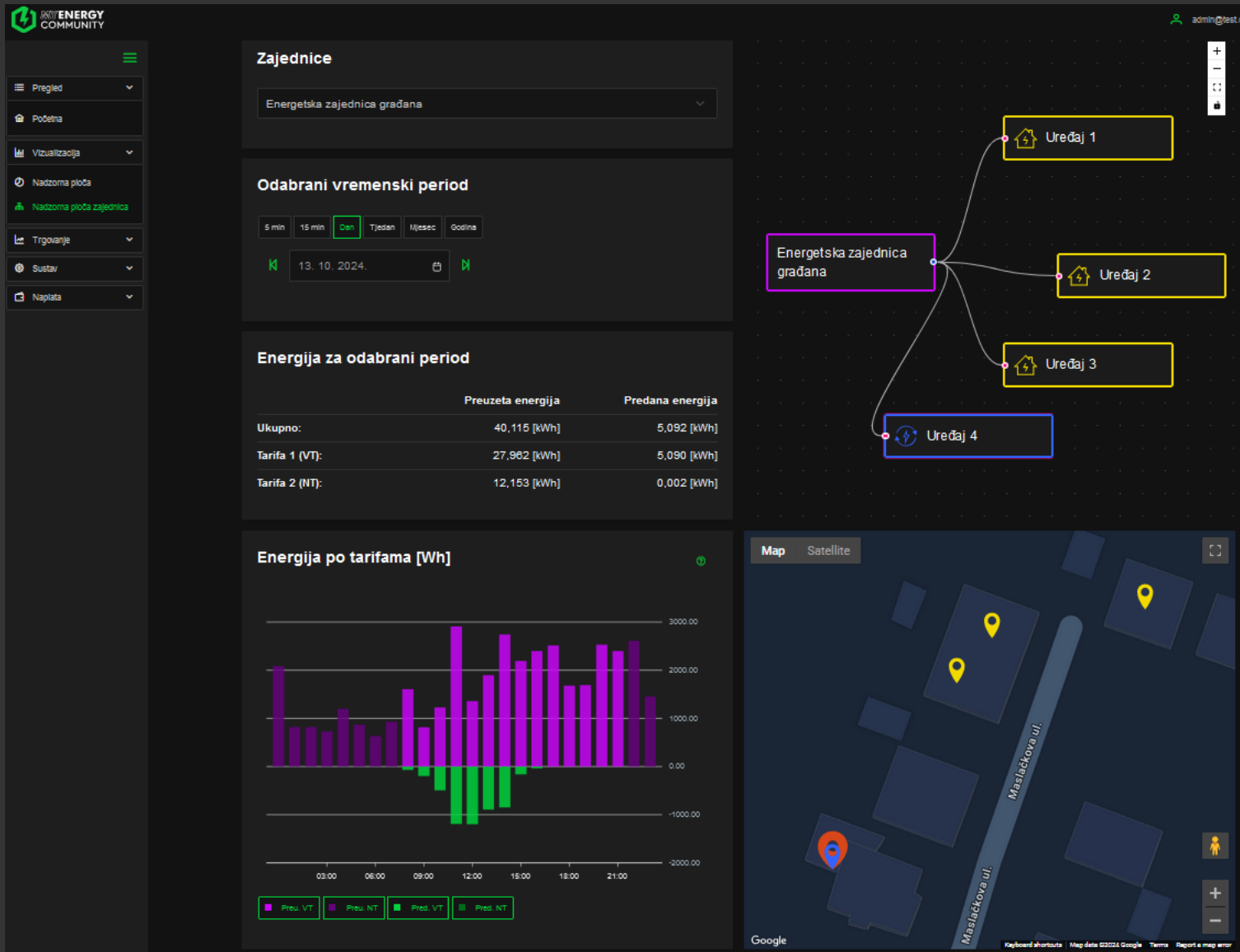
4 Energetske zajednice građana

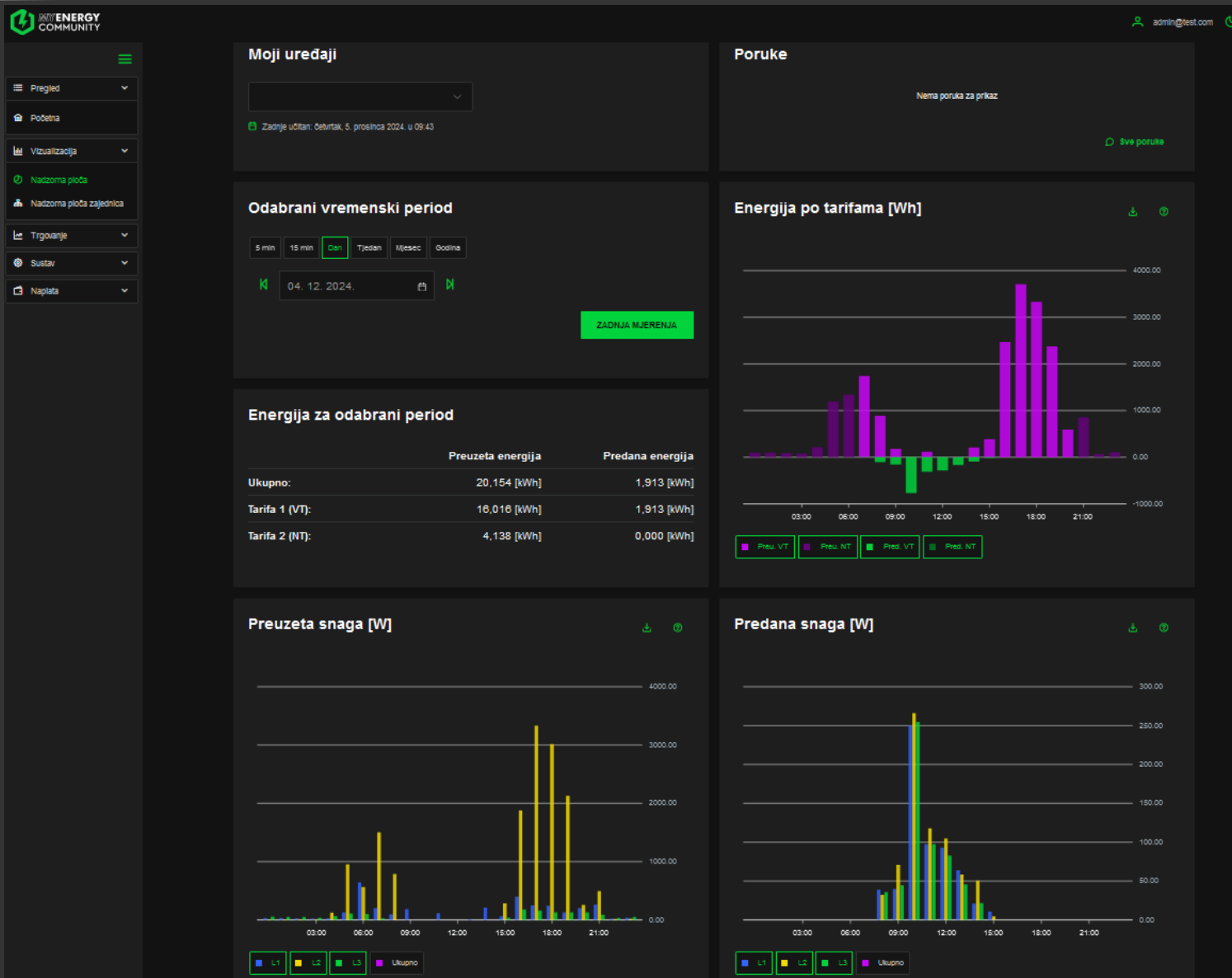


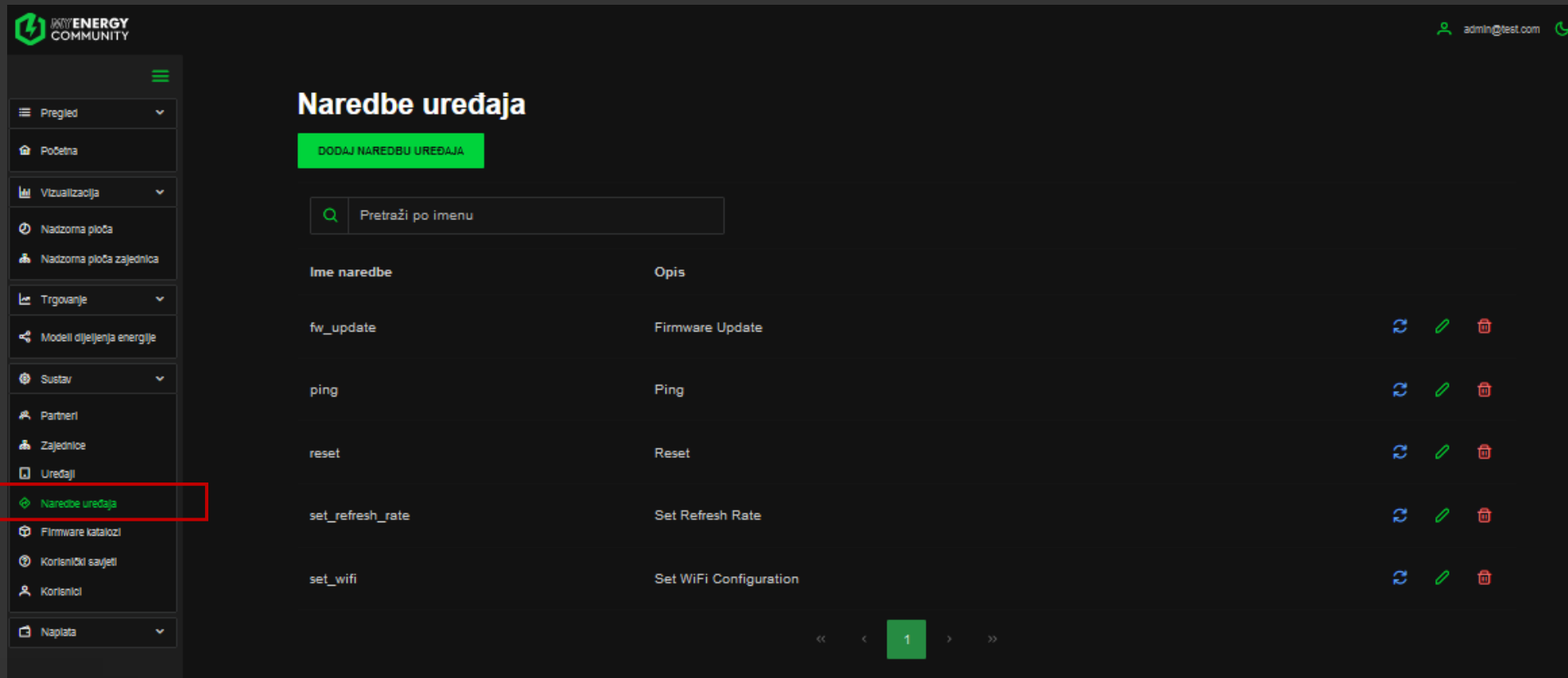
AKTIVNI KUPAC U NAPREDNOJ MREŽI

Od pasivnih potrošača do aktivnih sudionika: Uloga krajnjih korisnika u energetske zajednicama









MYENERGY COMMUNITY admin@test.com

Naredbe uređaja

DODAJ NAREDBU UREĐAJA

Pretraži po imenu

Ime naredbe	Opis			
fw_update	Firmware Update	↺	✎	🗑️
ping	Ping	↺	✎	🗑️
reset	Reset	↺	✎	🗑️
set_refresh_rate	Set Refresh Rate	↺	✎	🗑️
set_wifi	Set WiFi Configuration	↺	✎	🗑️

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- Vrijednost prikupljenih podataka

Curl

```
curl -X GET "https://api.myenergycommunity.eu/v1/measurements/device/GJNH88866XFZSNH" -H "accept: application/json" -H "OwnerId: test_owner"
```

Request URL

```
https://api.myenergycommunity.eu/v1/measurements/device/GJNH88866XFZSNH
```

Server response

Code Details

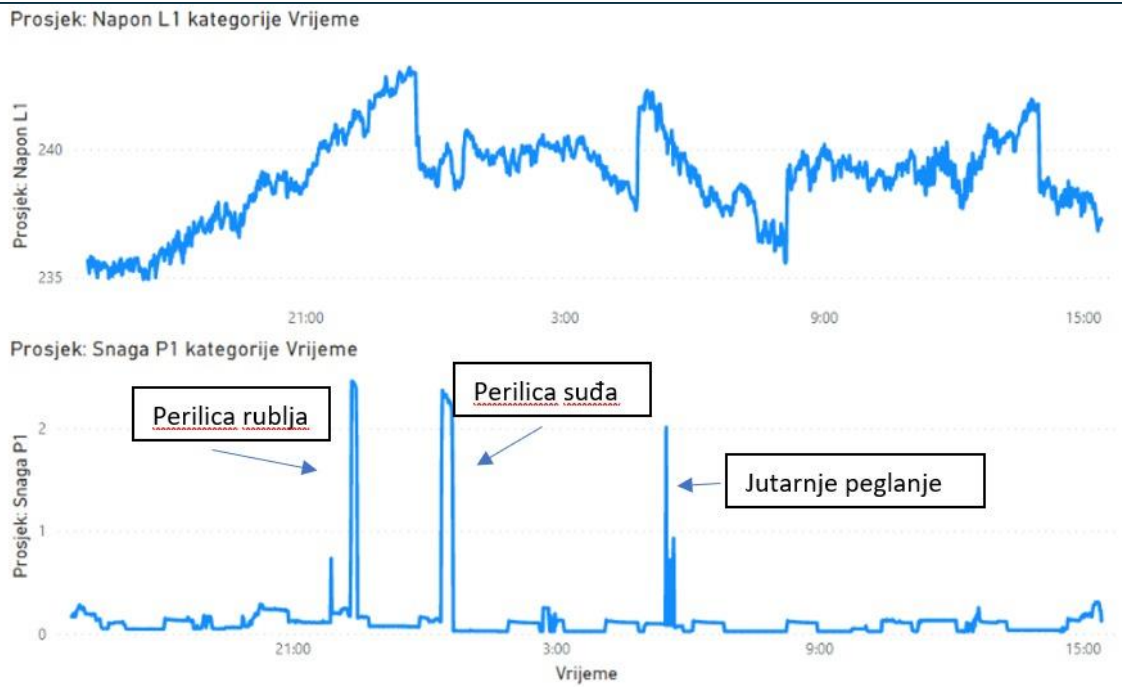
200

Response body

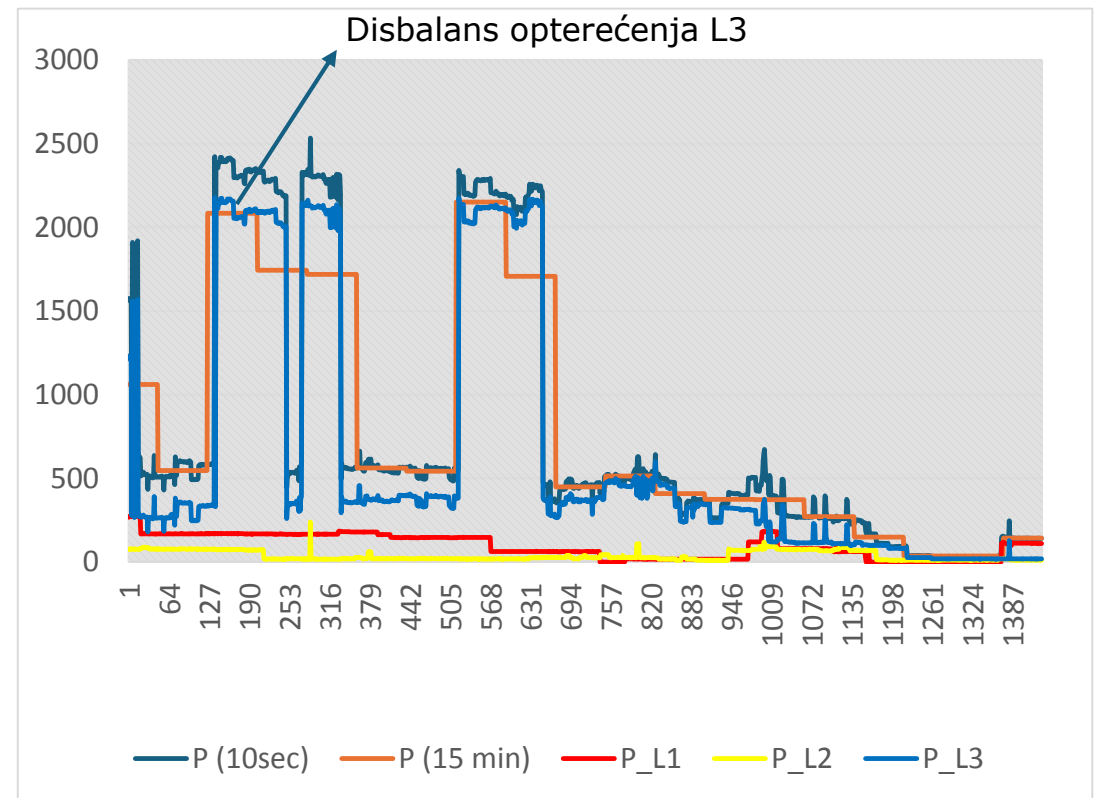
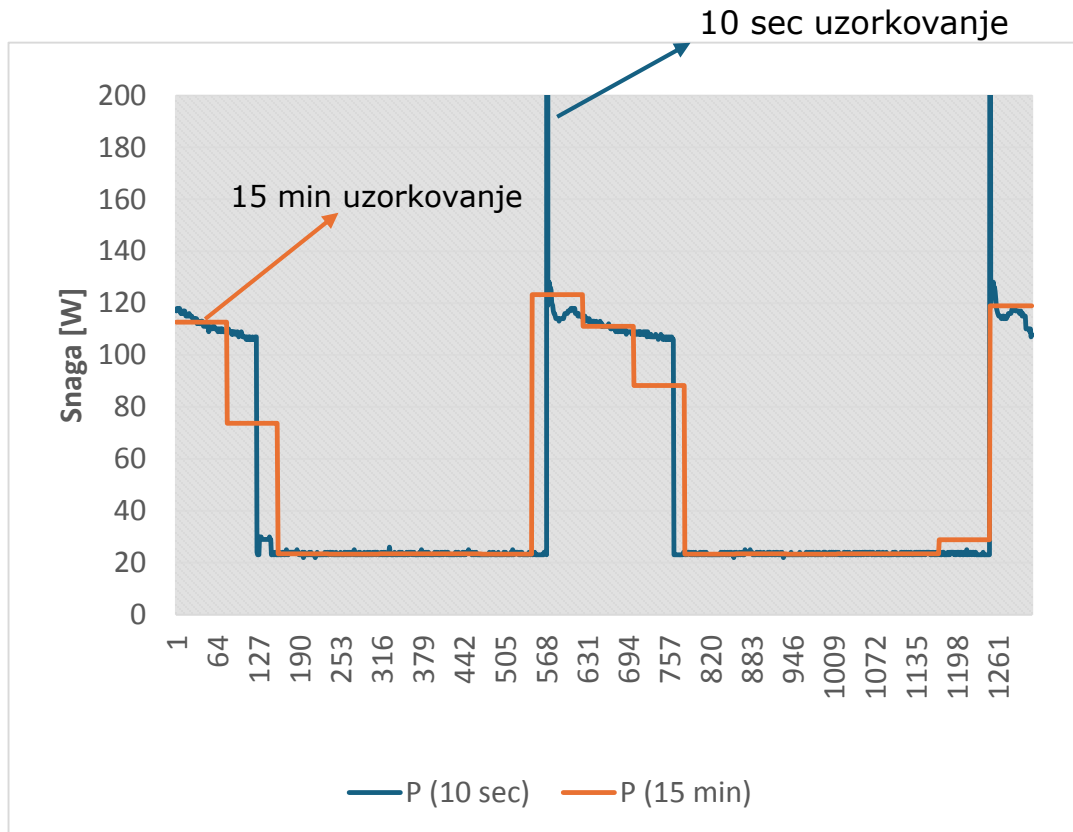
```
"items": [  
  {  
    "deviceId": "GJNH88866XFZSNH",  
    "geoCoordinates": {  
      "latitude": 0,  
      "longitude": 0  
    },  
    "deviceDateTime": "2023-04-04T12:47:50",  
    "deviceType": 0,  
    "measurementData": {  
      "supervMon1": null,  
      "dongleId": "GJNH88866XFZSNH",  
      "serialNo": "SMWR-P1-001-001-00000004",  
      "wifiMAC": "30C6F7B4A150",  
      "localDate": "221207",  
      "localTime": "145102",  
      "deviceIDS": "4131462D48455030303035",  
      "meterSerial": "78416201",  
      "energyIn": 41824.266,  
      "energyIn_T1": 16757.514,  
      "energyIn_T2": 25066.74,  
      "energyOut": 2.696,  
      "energyOut_T1": 2.641,  
      "energyOut_T2": 0.055,  
      "powerIn": 0,  
      "powerOut": 0,  
      "voltageL1": 239.7,  
      "currentL1": 0,  
      "limiter1": null  
    }  
  }  
]
```

Response headers

```
content-encoding: gzip  
content-type: application/json; charset=utf-8  
date: Mon, 22 May 2023 19:07:39 GMT  
request-context: appId=cid-v1:1f0e647b-b638-4934-96ee-869dea68b40b  
transfer-encoding: chunked  
vary: Accept-Encoding
```

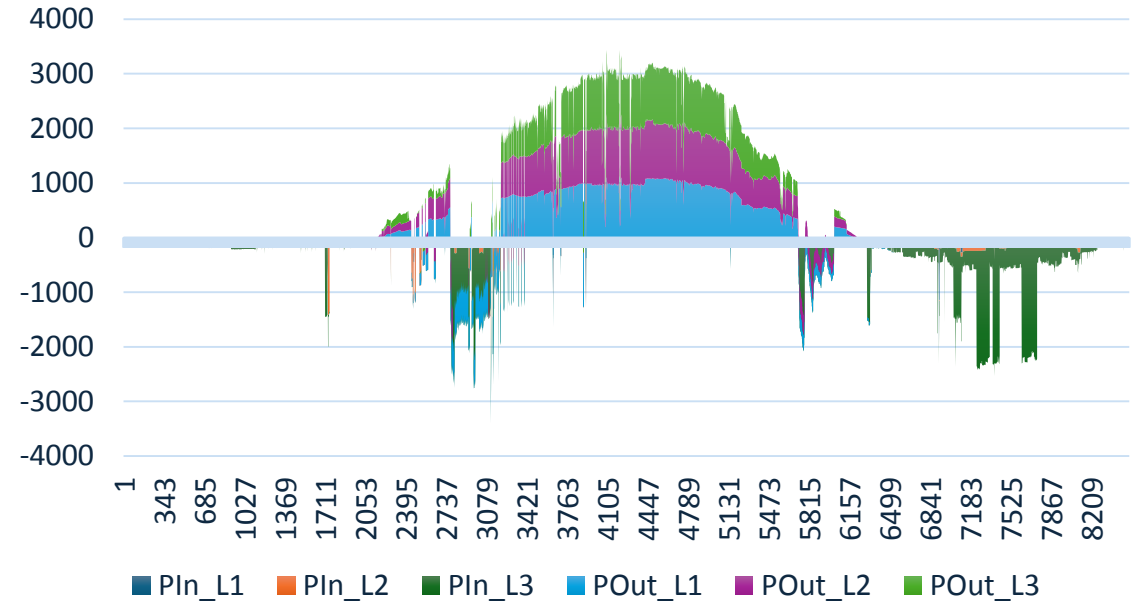
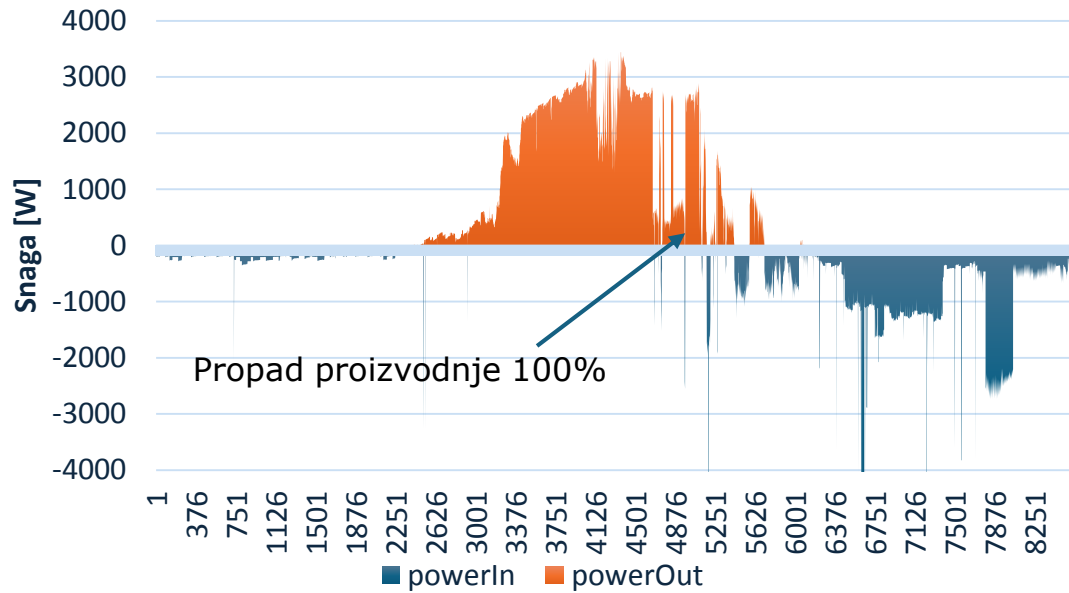


- Vrijednost prikupljenih podataka

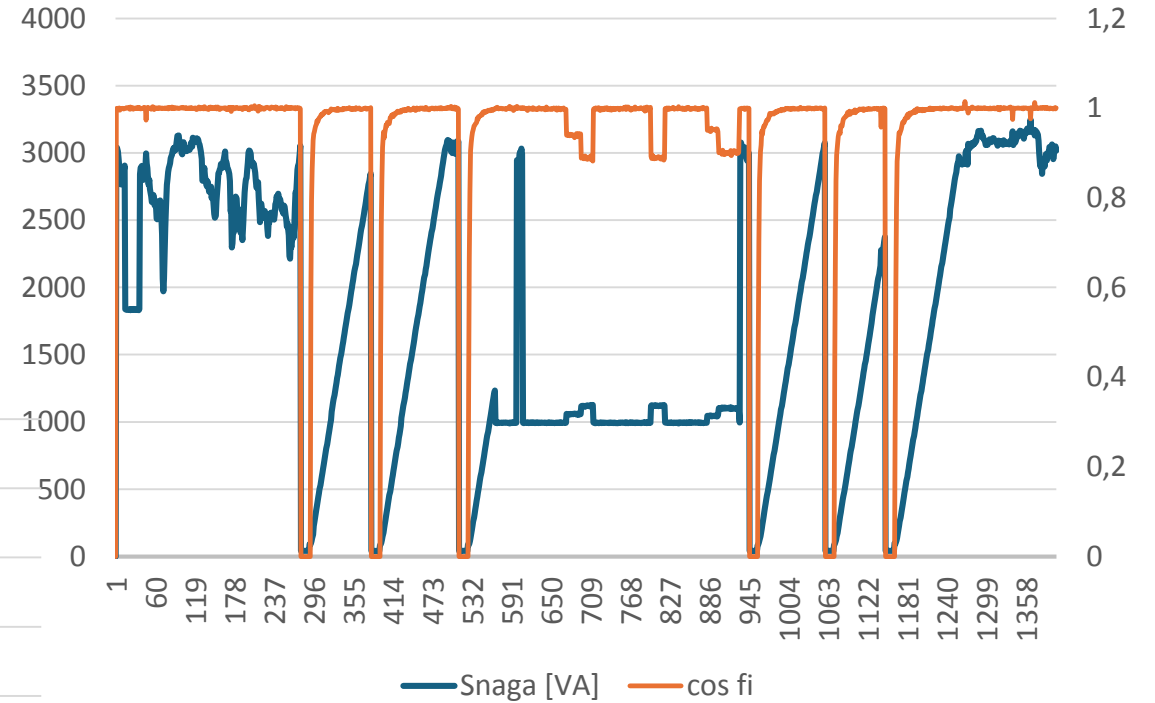
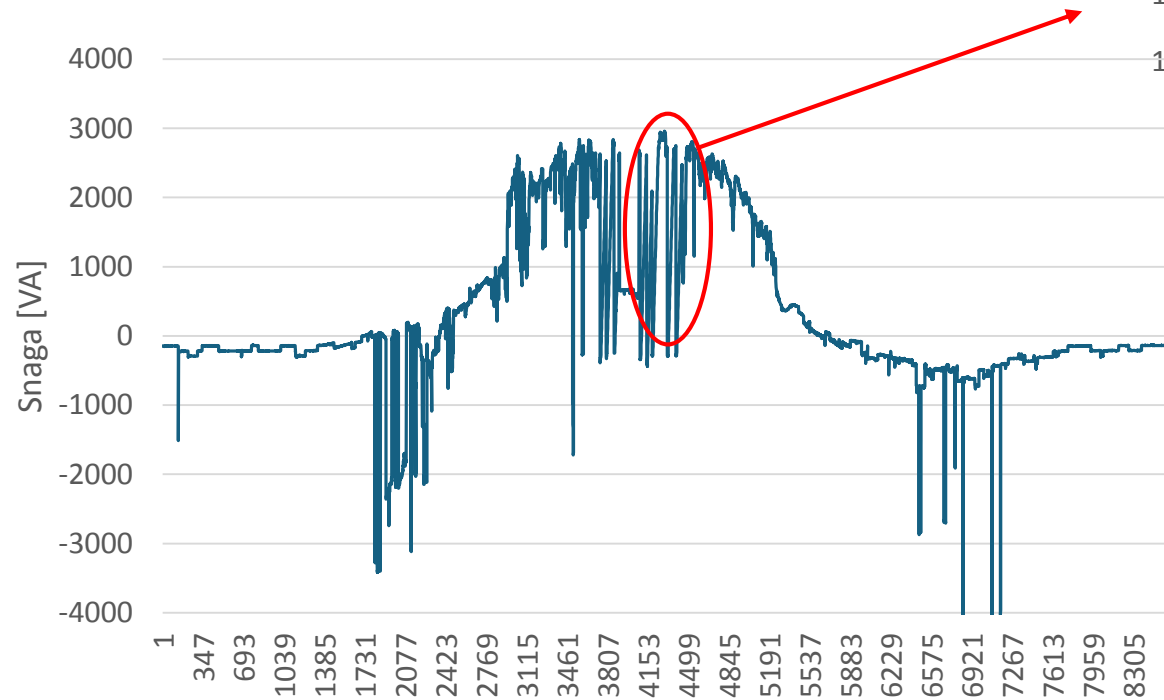


AKTIVNI KUPAC U NAPREDNOJ MREŽI

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- **Ograničenje snage izmjenjivača**
- **Regulacija jalove snage / napona**



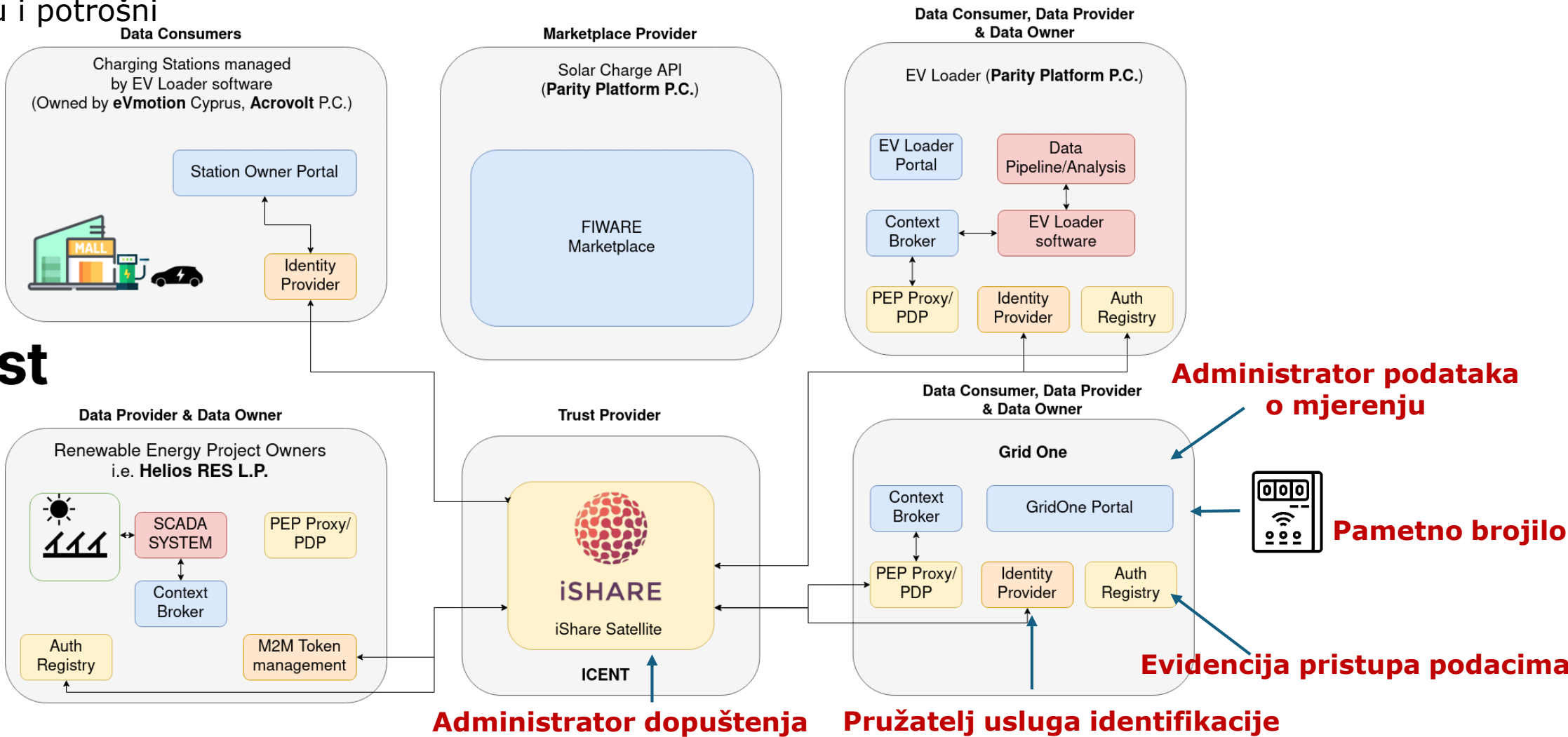
Provedbena uredba EU komisije 2023/1162

Zahtjevi interoperabilnosti i nediskriminirajućim i transparentnim postupcima za pristup podacima o mjerenju i potrošnji

- Uredba definira zahtjeve u pogledu interoperabilnosti, pravila i postupke za pristup podacima
- Definišu se nove uloge i funkcije:
 - Administrator podataka o mjerenju
 - Evidencija pristupa podacima
 - Administrator mjernih točaka
 - Pružatelj pristupa podacima
 - Pružatelj usluga identifikacije
 - Sustav podataka o potrošnji u gotovo stvarnom vremenu

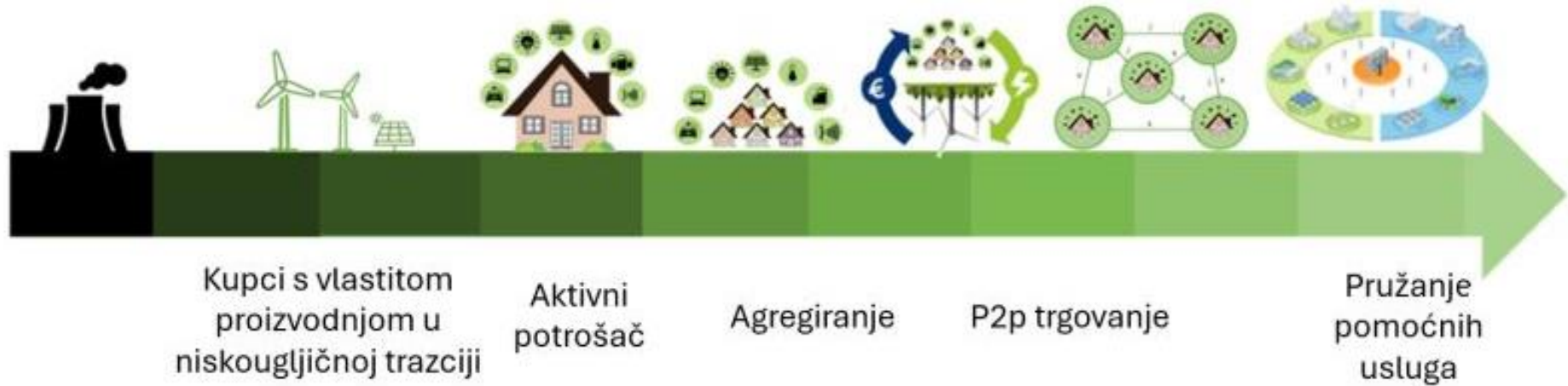
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HVALA NA PAŽNJI !