



## Case Study Memorandum

### on accounting metering system as a base for successful market functioning in Bosnia and Herzegovina

#### Introduction:

An accounting metering system enables market participants to execute financial settlement among themselves to charge parties who incur costs for those who provide services in the Electric Power system. A metering system that serves as the basis for successful market functioning must clearly address the following issues:

1. Responsible parties to provide metering data
2. Technical characteristics of the metering system
3. Metering data acquisition
  - a. Transmission of metering data
  - b. Means of data transmission
  - c. Time schedule
4. Processing of the metering data
  - a. Recipient who processes metering data
  - b. Checking of the collected data and creation of the final load curve
  - c. Load curves and billing data that result from the processing
5. Data storage
  - a. Database characteristics
  - b. Keeping data in the database
6. Delivery of billing data
  - a. Billing Data delivery format
  - b. Means to deliver billing data
  - c. Recipients of the billing data and the list of delivery data per each recipient
  - d. Time schedule to deliver data

To analyze if the existing documents cover BiH metering processes, REAP analyzed the following documents:

State level: (i) Grid Code (includes Metering Code), (ii) Market Rules and (iii) ISO Draft Automatic Meter Reading System

Entity Level:

FBiH: (i) General Conditions of Supply, (ii) Grid Code, (iii) Rule on metering point

RS: (i) General Conditions of Supply, (ii) Grid Code (includes Rule on metering point)

### Discussion:

While items 1 and 2 from the above list are clearly defined, responsibility assigned and items 3 and 5 are partially addressed, work is needed to define processes related to items 4 and 6.

It appears that the General Conditions of Supply, Distribution Code and Rule on Metering point, were developed to cover the current situation where supplier and distribution are one company, and people who work for different functions within the EP (Supply and Distribution) work together and are paid from the same account. The following elements of the process chain are missing:

1. Specification of data developed by the processing of measurement data and type of delivery data for recipients
2. List of recipients
3. Time schedule, format and means to deliver data to recipients

REAP proposes that a Document be developed to determine the data developed by the processing of measurement data, type of delivery data for recipients, list of recipients, time schedule, format and means to deliver data to recipients (Rule on metering). The document must consider the role of all users of data, suppliers, BRP, DSO, ISO and Transco. In addition, the rule must be complementary to similar rules developed for high voltage network users by the ISO and Transco.

The Transco and DSOs must sign a connection contract that will take into account the Rules on metering developed for market participants.

The results of the REAP analysis are presented in the following table and figures:

### Metering in the High Voltage Network:

Issue	Document	Articles/Item	Responsible Party	Note
Responsible parties to provide metering data	ISO Grid Code	Item 5.23: Metering Item 9: Metering Code	Transco & System Users	<i>Grid Code:</i> <i>System users:</i> <i>-DSOs,</i> <i>-Generators</i> <i>-Customers connected to Transmission Network</i> <i>Market Rules:</i> <i>Market Participants:</i> <i>-Generators</i> <i>-Traders</i> <i>-Suppliers</i>
Technical characteristics of the metering system	ISO Grid Code	Metering Code Item 9: Metering Code	Transco & System Users	



Issue		Document	Articles/Item	Responsible Party	Note
Metering data acquisition	Transmission of metering data	ISO Grid Code	Metering Code Item 5.23: Metering	Transco & System Users	
	Means of data transmission		Metering Code Item 5.23: Metering	Remote Terminals (see Figure 1)	Gap: ISO and Transco did not develop a Rule on Metering (or similar document)
	Reading and Time schedule		Metering Code Item 9.6.7	Item 9.6.7: ISO and Transco will determine format and time schedule for metering data acquisition	GAP: Have the ISO and Transco determined the format and time schedule for metering data acquisition? (It seems they did not.)
Processing of the metering data	Recipient who processes metering data	ISO Grid Code	Metering Code Item 9.21.	ISO	
	Checking collected data and creation of the final load curve		Metering Code Item 9.11. (Data Base) & 9.13. (Replacement of data)	ISO	Gap: "ISO will develop a procedure to replace metering data and guideline along with other participants".
	Load curves and billing data that result from the processing		Metering Code Item 9.1.3. (metering data will serve for electricity and financial settlement) Item 9.11.6 (original, time dependent and calculated measurement data)	ISO	Gap: A detailed List of generated data from the process does not exist.
Data storage	Database characteristics	Grid Code	Metering Code Item 9.11.	ISO	
	Keeping data in the database				
Delivery of metering data	Billing Data delivery format	Grid Code	Metering Code Item 9.14. (ISO will enable all users and Transco to get related billing data from the data base).	ISO	Gap: Description does not exist
	Means to deliver data		?		Gap: Description does not exist
	Recipients of		Metering Code		Gap: System



Issue	Document	Articles/Item	Responsible Party	Note
the metering data and the list of delivery of data per recipient		Item 9.14. (ISO will enable all users and Transco to get related billing data from the data base)		users: -DSOs, -Generators -Customers connected to Transmission network ( <i>what about suppliers, traders?</i> )
Time schedule to deliver data		?		Gap:

Figure 1: ISO and EPs in BiH agreed to organize an Automatic Meter Reading System (Transco has not mentioned it)

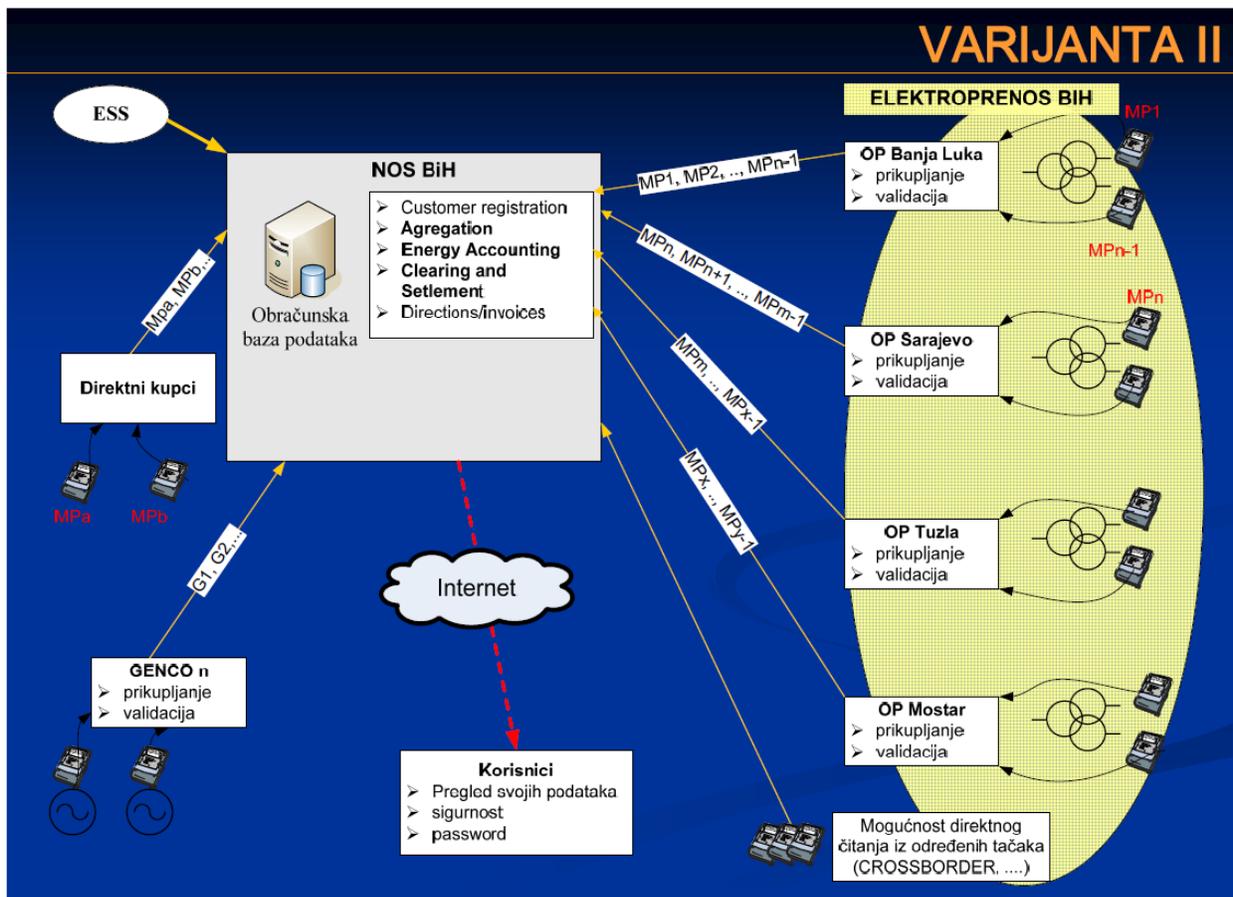
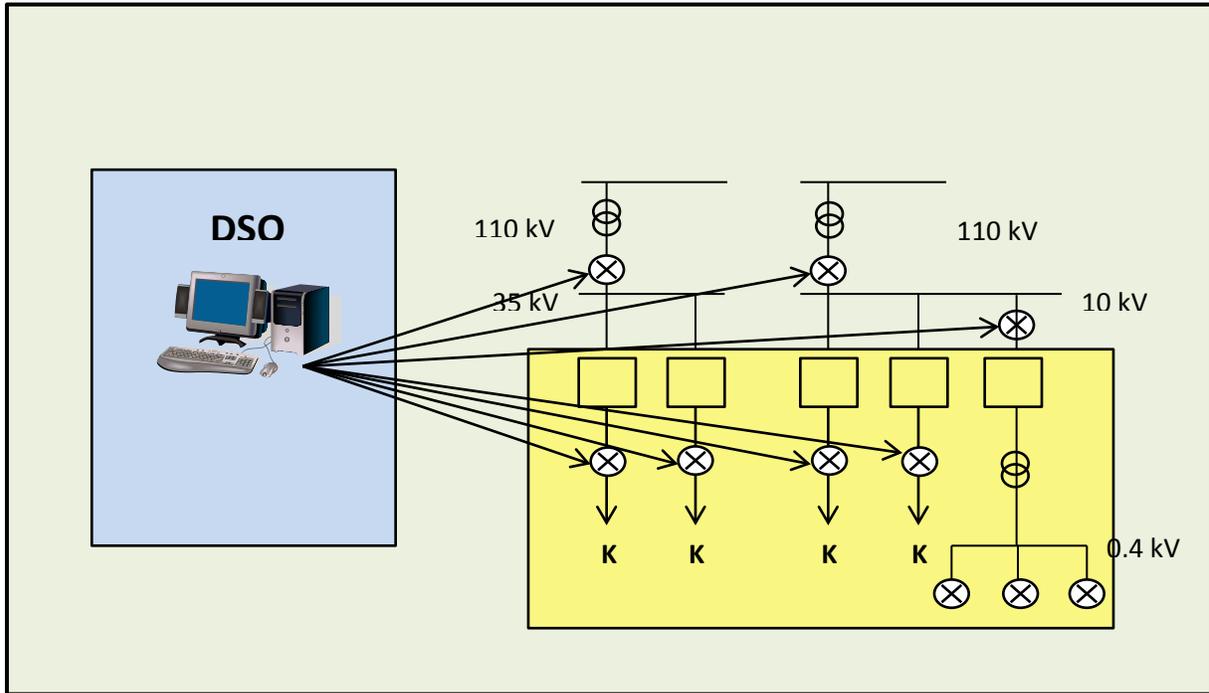


Figure 2: Metering in the distribution network



### Metering in the Distribution Network - FBiH:

Issue	Document	Articles/Item	Responsible Party	Note
Responsible parties to provide metering data	<ul style="list-style-type: none"> <li>- General Conditions of Supply</li> <li>- Rule on Metering point</li> </ul>	<ul style="list-style-type: none"> <li>- General Conditions of Supply: Art. 62</li> <li>- Rule on Metering point: Art. 28</li> </ul>	DSO	
Technical characteristics of the metering system	<ul style="list-style-type: none"> <li>- General Conditions of Supply</li> <li>- Rule on Metering point</li> </ul>	<ul style="list-style-type: none"> <li>- General Conditions of Supply: Chapter III: Meter Reading, Accounting &amp; Billing</li> <li>- Rule on Metering point: Art. 28</li> </ul>	DSO	
Metering data acquisition	Transmission of metering data	General Conditions of Supply	Rule on Metering point	DSO
	Means of data transmission	Contract on Access to Network	Rule on Metering point	DSO
	Reading and Time schedule	Rule on Metering point	General Conditions of Supply: Rights and Obligation	DSO



Issue		Document	Articles/Item	Responsible Party	Note
			Art. 5		
Processing of the metering data	Recipient who processes metering data	<ul style="list-style-type: none"> <li>- General Conditions of Supply</li> <li>- Rule on Metering point</li> </ul>	General Conditions of Supply: Rights and Obligation Art. 5	DSO	
	Checking of the collected data and creation of the final load curve		Rule on Metering point: Art. 29 &30	DSO	
	Load curves and billing data that result from the processing		Rule on Metering point: Art. 30 & 32	DSO	Gap: Art. 32 does not specify which metering data are being produced by the DSO and how (detailed description missing)
Data storage	Data base characteristics	Rule on Metering point	Rule on Metering point: Art.31	DSO	Gap: No details on the database.
	Keeping data in the database				
Delivery of metering data	Billing Data delivering format	<ul style="list-style-type: none"> <li>- General Conditions of Supply</li> <li>- Distribution Code</li> </ul>			Gap: This issue is nowhere addressed.
	Means to deliver data				Gap: This issue is nowhere addressed.
	Recipients of the metering data and the list of delivery of data per recipient		<ul style="list-style-type: none"> <li>- General Conditions of Supply: Art. 38: relations between power utilities will be defined by with separate contracts.</li> <li>- Distribution Code: Art. 79 Transco and DSO will agree data exchange on the operational and billing measurement data</li> </ul>		Gap: A DSO-Transco Contract does not exist. Gap: No other recipients are envisaged, but there is a general statement in the General Conditions stating that relations between participants will be defined by separate contracts. These contracts include mutual communication and data exchange and issues related to accounting metering.
	Time schedule to deliver data				Gap: This issue is nowhere addressed.



**Metering in the Distribution Network - RS:**

Issue		Document	Articles/Item	Responsible Party	Note
Responsible parties to provide metering data		- General Conditions of Supply	- General Conditions of Supply: Art. 9 and Chapter V -	DSO	
Technical characteristics of the metering system		- General Conditions of Supply	- General Conditions of Supply: Chapter V: Metering,	DSO	
Metering data acquisition	Transmission of metering data	General Conditions of Supply Contract on Access to Network	General Conditions of Supply: Chapter VI meter reading, billing, invoicing:	DSO	
	Means of data transmission			DSO	
	Reading and Time schedule		General Conditions of Supply: Chapter VI meter reading, billing, invoicing:	DSO	
Processing of the metering data	Recipient who processes metering data	- General Conditions of Supply	General Conditions of Supply: Chapter II, Art. 9, DSO's Obligation	DSO	Gap: Neither the General Conditions nor the Distribution Code consider metering data processing to provide data to recipients
	Checking the collected data and creation the final load curve				Gap: Neither the General Conditions nor the Distribution Code consider metering data processing and checking to provide data to recipients
	Load curves and billing data that result from the processing				Gap: Neither the General Conditions nor the Distribution Code consider metering data processing and creation of load curves and billing data.



Issue		Document	Articles/Item	Responsible Party	Note
Data storage	Database characteristics	Distribution Code	Distribution Code, Chapter 8. Rule on billing measurement	DSO	Gap: No details on the database. In particular, there is no list of measurement and billing data that the database must store.
	Keeping data in the database				Gap: No details on the database, in particular, there is no list of measurement and billing data that the database must store.
Delivery of metering data	Billing Data delivering format				Gap: This issue is nowhere addressed.
	Means to deliver data				Gap: This issue is nowhere addressed.
	Recipients of the metering data and list of delivery data per recipient		<ul style="list-style-type: none"> <li>- General Conditions of Supply: Art. 59: relations between power utilities will be defined with separate contracts.</li> <li>- General Conditions of Supply: Art. 83: the DSO will provide billing data to the Supplier.</li> <li>- Distribution Code, Chapter 6, Art. 6.1. (3 &amp;4.): Transco and DSO will sign a contract and agree on data exchange on the operational and billing measurement data</li> </ul>		<p>Gap: A DSO-Transco Contract does not exist.</p> <p>Gap: No other recipients are envisaged, but general statement in the GC that relations between participants will be defined in separate contracts. These contracts include mutual communication, data exchange and issues related to accounting metering.</p>
	Time schedule to deliver data				Gap: This issue is nowhere addressed.



**USAID**  
FROM THE AMERICAN PEOPLE

**Regulatory and Energy Assistance**

Disclaimer:

This Memorandum is made possible by support from the American People sponsored by the United States Agency for International Development (USAID). The contents are the sole responsibility of the author/s and do not necessarily reflect the views of USAID or the United States Government.