PRISHTINA HEATSAVE
DISTRICT HEATING METERING

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Energy Director
Millennium Foundation Kosovo
BACKGROUND

Millennium Foundation Kosovo is the implementing entity of the $49 Million Threshold Program agreed between the Government of the Republic of Kosovo and the Millennium Challenge Corporation.

Kosovo Threshold Program addresses two key constraints to Kosovo’s economic growth: an unreliable supply of electricity; and real and perceived weakness in the rule of law, government accountability, and transparency.

- Reliable Energy Landscape Project
  - Pilot Incentives on Energy Efficiency – $20.6 million
  - District Heating Metering – $10.9 million
  - Independent Power Producer Finance facilitation - $5 million

- Transparent and Accountable Governance Project
Within the Reliable Energy Landscape Project, the objective of the DHM Activity is to support the reduction of electricity consumption used for heating by introducing quantity-based thermal energy metering on the DH Termokos supply network in Pristina.

Implementing a consumption-based heat metering is expected to:

- Reduce demand on the district heat network;
- Support expansion of heat supply services to new consumers which rely on electricity for heating;
- Improve the services for the consumers who already reside in buildings connected to district heating services; and
- Enable Termokos to transition into consumption-based billing and thus better align their revenues with their costs and the services they provide.
The aim of these interventions are:

- Installation of measuring equipment in 17,500 apartments to reflect consumption-based heat metering.
- Installation of thermostatic heating valves with built-in balancing function on radiators.
  - 70,500 Thermostatic valves
  - 51,300 Heat Cost Allocators
  - 4,500 heat meters
  - Support regulator with the design of consumption-based tariffs.
  - Support the Termokos’ corporate upgrade transition from spatial billing to consumption-based billing as well as upgrading the consumers database with new software for pricing and billing.

**Total Budget**

- **MFK:**
  - $10.9 million
- **Municipality:**
  - €2 million
Outline of activities

The Meters, Heat Cost Allocators, Thermostatic Dynamic Valves and the Software start installing

MFK, MCC and the Implementing partners start providing training, capacity building, and regulatory support

Termokos starts applying the new tariffs

Termokos upgrades billing methodology and customer services

MFK, MCC and the Implementing Partners start intensive behavior change campaigns, helping people understand the potential benefits of the new billing system

MFK and MCC conduct monitoring and evaluation of the systems in place

Environmental and Social Impact Compliance

Gender and Social Inclusion Compliance

PRISHTINA HEATSAVE
PRISHTINA HEATSAVE
District heating systems in Kosovo

Primary Network

Secondary Network

Building Substation delimitation point
PRISHTINA HEATSAVE
District heating systems in Kosovo

Vertical piping system

Mainly old buildings (60%)

Horizontal piping system

Mainly new buildings (40%)
Thermostatic Radiator Valves

Thermostatic radiator valves are self-regulating valves, designed to maintain a constant temperature in a room.

PRISHTINA HEATS SAVE
Heat consumption at Vertical Piping System
HCA's indirectly estimate the heat consumption of each radiator by measuring the temperature difference between a specified point on the radiator surface and surrounding indoor environment (room) and by taking into account the radiator characteristic coefficients.
Decon International is currently implementing consultant whereas IVT consult is Supervising the project

- Baselines studies (HH and Technical)
- Tender Documents
- Institutional, Regulatory and Organizational Measures
- Behavior Change and Outreach Campaigns
- Heat-cost allocation methodology to support consumption-based billing
- Training on Consumption-Based Billing provided to both ERO and Termokos
  - Reviewed by ERO and expected to be in public consultation
- Other GSI and ESP trainings and compliance requirements
- Monitoring and Evaluation
PRISHTINA HEATSAVE
Pricing Methodology-Cap Regulation

Investment Plan

Energy Balance

Regulatory Asset Base
\[ RAB_t = (RAB_{t-1}) - DEP + CAPEX \]

Subsidies

Primary Fuel Purchase Costs

plus
Heat Purchase Costs

less
subsidies

Depreciation

Allowed Return

Unregulated Income

Operating Expenses

Heat Energy Purchase Costs

Maximum Allowed Revenues (MAR)

Average Tariff (EUR/MWh)

\[ \text{Average Tariff} = \frac{\text{Investment Plan}}{\text{Energy Balance}} \]
a) Fair and transparent – reflect actual measured/estimated heat consumption of the unit.

b) Heat metered at thermal substation-level is the main referent measurement of heat supplied to the building for which the heat supply company should be compensated;

c) The difference between heat measured at building’s substation-level and the aggregated heat consumption of all building’s units shall be allocated proportionally to the heating area of each unit;
PRISHTINA HEATSAVE
Pricing Methodology-Cap
Regulation

Maximum Allowed Revenues (MAR)

Fixed Component
- Fixed part of O&M
- Annual Depreciation
- Return on Assets

Variable Component
- Variable part of O&M
- Network Losses
PRISHTINA HEATSAVE
Pricing Methodology-Cap
Regulation

Customer Tariff Groups

Metered

Un-metered

Residential / household

Commercial and institutional

Variable Tariff

Fixed Tariff
# PRISHTINA HEATSAVE

## Consumption-Based Billing Methodology

<table>
<thead>
<tr>
<th>Heat metering level</th>
<th>Metering device and measurement point</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building-Level metering</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Heat Meter at building substation Measures heat supplied to the building</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Sub-metering</td>
<td>Vertical Piping System</td>
</tr>
<tr>
<td></td>
<td>Unit-Level metering through Heat Cost Allocation (HCA)</td>
</tr>
<tr>
<td></td>
<td>Heat Meter at substation Measures heat supplied to the building</td>
</tr>
<tr>
<td></td>
<td>HCA on the unit’s radiators Allocation of consumed heat between the units</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Horizontal Piping System</td>
</tr>
<tr>
<td></td>
<td>Unit-level metering through heat meter</td>
</tr>
<tr>
<td></td>
<td>Heat Meter at substation Measures heat supplied to the building</td>
</tr>
<tr>
<td></td>
<td>Individual Unit’s Heat Meter Measures the heat supplied to the unit</td>
</tr>
</tbody>
</table>
**Thermal Capacity Charge**

\[ TCC = HCU \cdot HCT, \text{[€]} \]

- **HCU** – Thermal Capacity of a Unit (kW)
- **HCT** – Heat (Thermal) Capacity Tariff (in €/kW/month)

**Common Heat Consumption Charge**

\[ CUS_{CHC} = US_{CHC} \cdot TET, \text{[€]} \]

- **US_{CHC}** – Unit’s Share of ‘Common Heat Consumption’ (kWh)
- **TET** – Thermal Energy (Heat) Consumption Tariff (€/kWh)

**Heat Consumption Charge**

\[ HCC = UHC_{MU-L} \cdot TET, \text{[€]} \]

- **UHC_{MU-L}** – heat consumption of a unit (kWh) that is measured at unit-level;
- **TET** – Thermal Energy (Heat) Consumption Tariff (€/kWh)
Negotiations meeting with the new awarded contractor for the supply and installation of the measuring and equipment

Updated / Compressed Implementation Schedule from the implementing contractor.

Tripartite agreement between Municipality, Termokos, and MFK for assigning the Project after MCC’s Threshold Program End Date in September 2022

Closure plan and assignment to District Termokos/Municipality for the unfinished works by November 2022.
## PRISHTINA HEATSAVE

### BOQ Heat Distribution equipment

<table>
<thead>
<tr>
<th>Description of Goods + Description of Related Services (see chapter 4.7.3 in Section V. Schedule of Requirements)</th>
<th>Quantit y</th>
<th>Final Destination as specified in BDS ITB 15.6</th>
<th>Purchaser’s Required Delivery Date (as per Incoterms)</th>
<th>Bidder’s offered Delivery date</th>
<th>Final Completion Date(s) of Services</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Earliest Delivery Date</td>
<td>Latest Delivery Date</td>
<td>Estimated Contract signature date: 15.03.2022</td>
</tr>
<tr>
<td>Heat distribution equipment (DH substation room, riser pipes)</td>
<td>135 pcs</td>
<td>Prishtina, Kosovo</td>
<td>15.05.2022.</td>
<td>30.09.2022.</td>
<td>Within 6 Months after estimated contract signature date</td>
</tr>
<tr>
<td>Heat circulation pump - DN40,50,65,60</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Balancing valve - DN25,32,40,50,65,80,100</td>
<td>70 pcs</td>
<td>Prishtina, Kosovo</td>
<td>15.05.2022.</td>
<td>30.09.2022.</td>
<td>Within 6 Months after estimated contract signature date</td>
</tr>
<tr>
<td>Differential pressure control valve - DN25,32,40,50,65,80,100</td>
<td>70 pcs</td>
<td>Prishtina, Kosovo</td>
<td>15.05.2022.</td>
<td>30.09.2022.</td>
<td>Within 6 Months after estimated contract signature date</td>
</tr>
<tr>
<td>Differential pressure control valve - DN32,40,50,65,80,100</td>
<td>60 pcs</td>
<td>Prishtina, Kosovo</td>
<td>15.05.2022.</td>
<td>30.09.2022.</td>
<td>Within 6 Months after estimated contract signature date</td>
</tr>
</tbody>
</table>
### PRISHTINA HEATSAVE

**BOQ (Heat control and metering equipment)**

<table>
<thead>
<tr>
<th>Heat control equipment (apartment distribution pipe)</th>
<th>Quantity</th>
<th>Location</th>
<th>Order Date</th>
<th>Delivery Date</th>
<th>Time Frame after Contract Signing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thermostatic radiator valve (2-way) with Thermostatic header (based on the technical offer of the bidder)</td>
<td>72,500 pcs</td>
<td>Prishtina, Kosovo</td>
<td>15.04.2022.</td>
<td>30.09.2022.</td>
<td>Within 6 Months after estimated contract signature date</td>
</tr>
<tr>
<td>Thermostatic radiator valve (3-way)*</td>
<td>50 pcs</td>
<td>Prishtina, Kosovo</td>
<td>15.04.2022.</td>
<td>30.09.2022.</td>
<td>Within 6 Months after estimated contract signature date</td>
</tr>
<tr>
<td>Heat metering/ meter reading collection equipment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heat meter (additional cost ultrasonic version)</td>
<td>4,300 pcs</td>
<td>Prishtina, Kosovo</td>
<td>15.06.2022.</td>
<td>30.09.2022.</td>
<td>Within 6 Months after estimated contract signature date</td>
</tr>
<tr>
<td>Heat cost allocators</td>
<td>51,000 pcs</td>
<td>Prishtina, Kosovo</td>
<td>15.04.2022.</td>
<td>30.09.2022.</td>
<td>Within 6 Months after estimated contract signature date</td>
</tr>
<tr>
<td>Parametriziation equipment</td>
<td>5 pcs</td>
<td>Prishtina, Kosovo</td>
<td>15.06.2022.</td>
<td>30.09.2022.</td>
<td>Within 6 Months after estimated contract signature date</td>
</tr>
<tr>
<td>Data collection/ transmission gateway</td>
<td>800 pcs</td>
<td>Prishtina, Kosovo</td>
<td>15.04.2022.</td>
<td>30.09.2022.</td>
<td>Within 6 Months after estimated contract signature date</td>
</tr>
<tr>
<td>Handheld unit (walk-by read-out unit)</td>
<td>5 pcs</td>
<td>Prishtina, Kosovo</td>
<td>15.04.2022.</td>
<td>15.05.2022.</td>
<td>Within 2 Months after estimated contract signature date</td>
</tr>
<tr>
<td>Heat metering and billing system</td>
<td>Quantity</td>
<td>Location</td>
<td>Start Date</td>
<td>End Date</td>
<td>Delivery Time</td>
</tr>
<tr>
<td>----------------------------------------------------------</td>
<td>----------</td>
<td>---------------------</td>
<td>------------</td>
<td>----------</td>
<td>-------------------------------</td>
</tr>
<tr>
<td>Central metering and billing server station</td>
<td>1 pc</td>
<td>Prishtina, Kosovo</td>
<td>15.04.2022</td>
<td>15.05.2022</td>
<td>Within 6 Months after estimated contract signature date</td>
</tr>
<tr>
<td>Printing and enveloping machine</td>
<td>1 pc</td>
<td>Prishtina, Kosovo</td>
<td>15.06.2022</td>
<td>30.09.2022</td>
<td>Within 6 Months after estimated contract signature date</td>
</tr>
<tr>
<td>Client PC workstation</td>
<td>4 pc</td>
<td>Prishtina, Kosovo</td>
<td>15.04.2022</td>
<td>30.09.2022</td>
<td>Within 6 Months after estimated contract signature date</td>
</tr>
<tr>
<td>Metering and billing software</td>
<td>1 pc</td>
<td>Prishtina, Kosovo</td>
<td>15.04.2022</td>
<td>30.09.2022</td>
<td>Within 6 Months after estimated contract signature date</td>
</tr>
</tbody>
</table>
THANK YOU