

# Mini-grid Tariff tools

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## Presentation Outline



Features of our current mini-grid tools



Comparisons with the AFUR tariff tool



Possible areas of improvements

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### **Features of our current mini-grid tools**



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## Features of the mini-grid tariff tool – Something to take note!



### Two different tariff models

Due to different regulatory approaches adopted for various mini-grids depending on the size, the ERB has two different tariff models.



Category 1 & 2 mini-grids whose capacities are below 1MW use a simplistic model whereas Category 3 mini-grids (with capacity above 1 MW) have a slightly more complex tool.

### Model discussed here

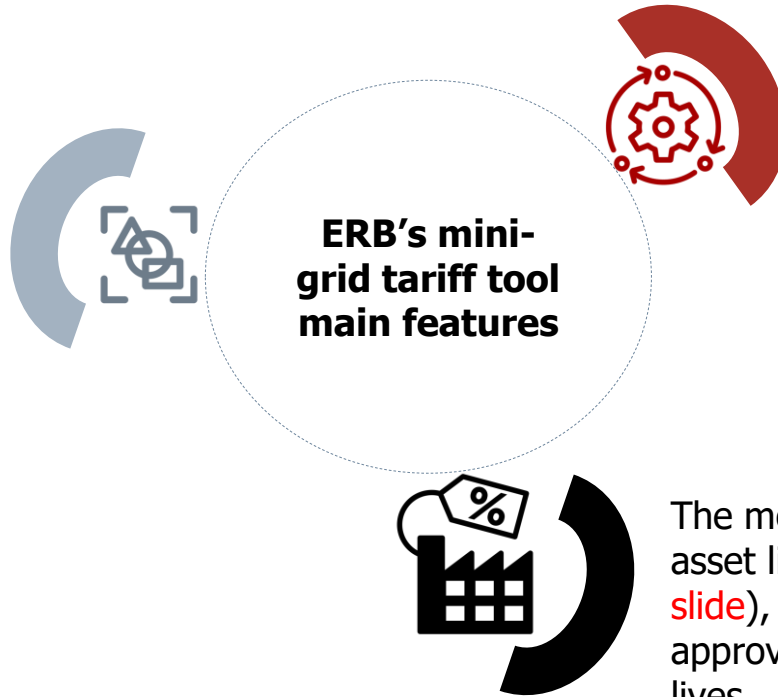


For the purpose of this discussion we will use the category 3 model which is a slight robust model and comparable the AFUR tariff tool.

## Features of the mini-grid tariff tool – At a Glance!



Comprises five (5) separate tabs for users to enter the RAB, O&M, Investment plan, subsidies, financial indices (Forex/ inflation rates)



The tariff tool automatically calculates projected depreciation, and O&M costs based on the information it is feed, **BUT it does not produce an output tariff – only projected Revenue requirement.**

The model already has prescribed asset lives (example on next slide), a user requires the ERB's approval to use different asset lives.

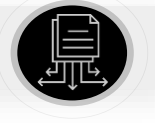
# Features of the mini-grid tariff tool – Extract of asset lives



## GUIDE FOR ASSET SCHEDULE (RAB)

| Asset Identifier  | Asset Category           | Asset Code | Asset Description   | Standard Life (in years) |
|---|--------------------------|------------|---|--------------------------|
| <b>Generation Assets - Solar PV</b>                             |                          |            |   |                          |
| Asset Code + 00001 up to 0000n e.g. PV0100001, PV0100002, etc.  | PV Module                | PV01       | e.g. PV Module Exiom Mono-Si 280W, 36.8V, 7.61A   | 20                       |
| Asset Code + 00001 up to 0000n e.g. PV0200001, PV0200002, etc.  | Battery                  | PV02       | e.g. Valve Regulated Lead Acid Battery, 2V, 200Ah   | 7                        |
| Asset Code + 00001 up to 0000n e.g. PV0300001, PV0300002, etc.  | Inverter                 | PV03       | e.g. Solar System Inverter, 6kW, 2 x Delta RPI H3   | 10                       |
| Asset Code + 00001 up to 0000n e.g. PV0400001, PV0400002, etc.  | Charge Controller        | PV04       | e.g. Manual pwm Solar Charge Controller, 30A, 48V   | 15                       |
| Asset Code + 00001 up to 0000n e.g. PV0500001, PV0500002, etc.  | Mounting Structure       | PV05       | e.g. Mounting Structure, Hot Dip Galvanized, 120 microns  | 20                       |
| Asset Code + 00001 up to 0000n e.g. PV0600001, PV0600002, etc.  | DC and AC Cable          | PV06       | e.g. PV Cable, 600/1000 V AC, 1800 V DC Conductor, Bare Copper, Double Insulated                    | 20                       |
| <b>Generation Assets - Small Hydropower</b>                     |                          |            |   |                          |
| Asset Code + 00001 up to 0000n e.g. SH0100001, SH0100002, etc.  | Civil Structures         | SH01       | e.g. Powerhouse/Intake/Headrace canal/Settling Basin/Spillway/Forebay Tank/Penstock/Tailrace        | 40                       |
| Asset Code + 00001 up to 0000n e.g. SH0200001, SH0200002, etc.  | Trash Racks              | SH02       | e.g. Fine Trash Rack, Steel   | 20                       |
| Asset Code + 00001 up to 0000n e.g. SH0300001, SH0300002, etc.  | Hydraulic Turbine        | SH03       | e.g. Water Turbine, 5 MW  | 30                       |
| Asset Code + 00001 up to 0000n e.g. SH0400001, SH0400002, etc.  | Generator                | SH04       | e.g. Synchronous Generator, 3 phase, 50 Hz, 15kW at 415V  | 40                       |
| Asset Code + 00001 up to 0000n e.g. SH0500001, SH0500002, etc.  | Main Inlet Valve         | SH05       | e.g. Turbine inlet valve of Water Turbine   | 30                       |
| <b>Distribution and Supply</b>                                  |                          |            |   |                          |
| <b>Distribution and Supply - Substation and Equipment</b>       |                          |            |   |                          |
| Asset Code + 00001 up to 0000n e.g. SE0100001, SE0100002, etc.  | Substation               | SE01       | e.g. Substation Building 120 sq. meters   | 40                       |
| Asset Code + 00001 up to 0000n e.g. SE0200001, SE0200002, etc.  | Power Transformer        | SE02       | e.g. Power Transformer, 13.8/2.77kV, 1MVA, OLTC   | 35                       |
| Asset Code + 00001 up to 0000n e.g. SE0300001, SE0300002, etc.  | Switchgear               | SE03       | e.g. Metalclad Switchgear, 6.24kV, 7 Vacuum Circuit Breakers (1 Incomer, 5 Feeders & 1 Bus Coupler) | 35                       |
| Asset Code + 00001 up to 0000n e.g. SE0400001, SE0400002, etc.  | Protective Equipment     | SE04       | e.g. Potential Transformer, 13.8kV, Outdoor, 120/70:1   | 25                       |
| Asset Code + 00001 up to 0000n e.g. SE0500001, SE0500002, etc.  | Metering and Control     | SE05       | e.g. Control & Metering Panel, 115.69/34.5, Single Bus (3 Circuit Breaker Panel) without IED        | 30                       |
| <b>Distribution and Supply - Distribution Transformers</b>      |                          |            |   |                          |
| Asset Code + 00001 up to 0000n e.g. DT0100001, DT0100002, etc.  | Distribution Transformer | DT01       | e.g. Distribution Transformer, 5kVA, 7.62kV-240/120V, 1PH, Pole Mounted                             | 30                       |
| <b>Distribution and Supply - Overhead Conductor and Devices</b> |                          |            |   |                          |

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Possible areas of improvements

## Comparison with the AFUR tariff tool



### Similarities



Generally, both tools use similar information requirements. Therefore, we do not really anticipate challenges with data compilation from the mini-grid licensees.

### Key notable differences



The ERB tariff tool does not produce an output tariff but mainly assists with projection of revenue requirement. Essentially the mini-grid provides the forecast demand and the ERB approves the WACC which is used to determine the Return on assets.



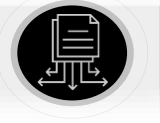
The ERB tool only has only depreciation method, i.e. straight line, this is because this is the approved depreciation policy.



The ERB tool does not provide any infographics in terms of the graphs/ figures



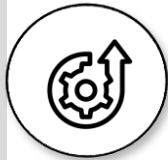
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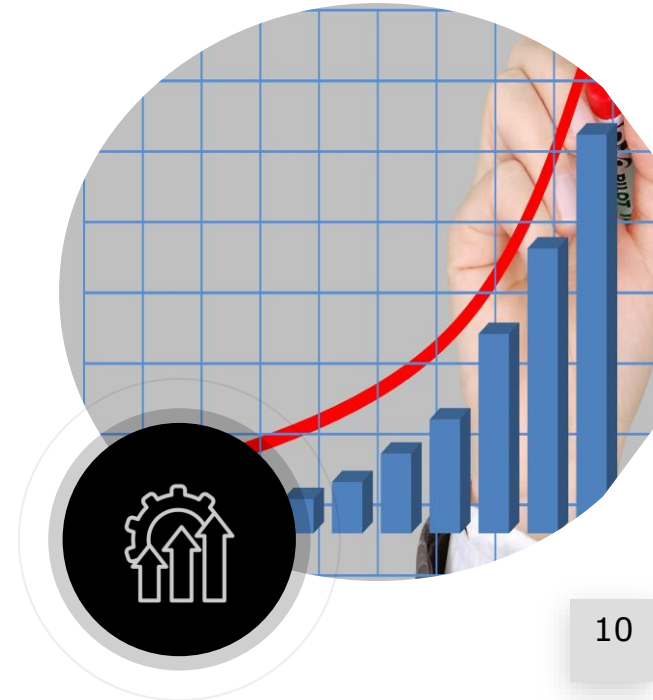


**Possible areas of improvements**

## Possible areas of improvements



- Generally, this is a more robust model than our tariff tool.
- We will appropriately provide areas of improvement once we begin using the tool – when we have a tariff application.



*Thank you for  
your attention !*