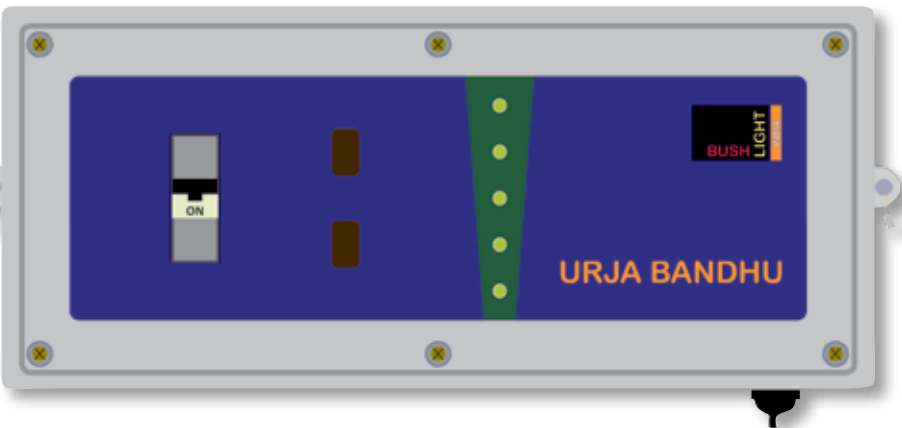


Many communities access to reliable electricity services is severely limited by geographic, economic and social disadvantages. Whether they be remote communities distant from the nearest grid line or impoverished slum dwellers the provision of a connection to a distributed supply of electricity can be difficult, while sustaining that supply even harder: illegal hooking, uncontrolled energy use and dissatisfaction with supply can all conspire to make management of supply and collection of revenue so difficult as to be an effective deterrence.

That said, these poor and marginalised communities can and do pay for energy - usually more than their urban counterparts but for inferior services. Quality and reliability of supply is usually therefore more important than the total quantum of energy able to be accessed, and excess or illegal consumption more often due to inequitable supply structures rather than assumptions about individual rights.

The Urja Bandhu provides a means of addressing these issues by providing equitable and reliable supply of an individually negotiated and agreed amount of energy to all consumers, every day: thereby providing an environment conducive to responsible use and tariff payment.



## BENEFITS:

- Consumers expectations and capacity to pay for energy services are successfully understood and people effectively match their chosen daily budget to their financial capacities, livelihood needs and aspirations
- Enables the establishment of an equitable fee system whereby people agree in advance to pay for a fixed amount of energy in the knowledge they will have assured access to that energy every day
- Service fees can be directly related to actual energy consumption; and fee levels costed to ensure income matches cost projections over the systems design life
- Maximum total connected daily demand in kWh is fixed. For battery based supply systems this allows for design optimisation while ensuring protection against over discharge. For grid systems, the daily budget limitation actively encourages energy efficiency, reducing the likelihood of excessive demand spikes.
- Consumers are given the tools to choose how they use their 'daily energy budget' on a day-to-day basis
- Can effect significant reductions in the likelihood of consumer dissatisfaction, power theft and a converse increase in people's willingness to pay.



## TECHNICAL INFORMATION :

**Two sizes available: the "light" 5 Amp version, and a "heavy" 16 Amp version.**

**Optional integrated switchboard.**

**Can be bolted directly onto a wall or mounted on a specially designed free standing pole.**

**"UB Programmer" is universal and password protected.**

**Internal clock, budget reset time and daily energy budget is individually programmed for each unit.**

**Units can be programmed with "Daily Energy Budgets" from 0-10,000 Wh/day.**

**Cumulative kWh reading available for each unit.**

**Safety measures include: fixing points for utility type security tags; special overlaps for fixing hologram security stickers; optional auto-disable function when unit is opened.**

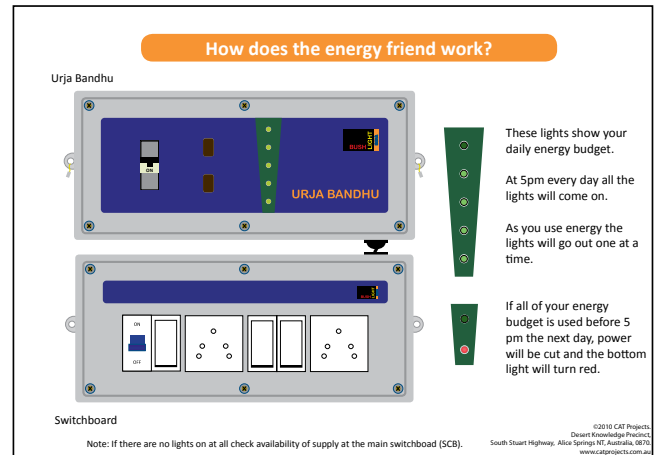


## HOW DOES IT WORK:

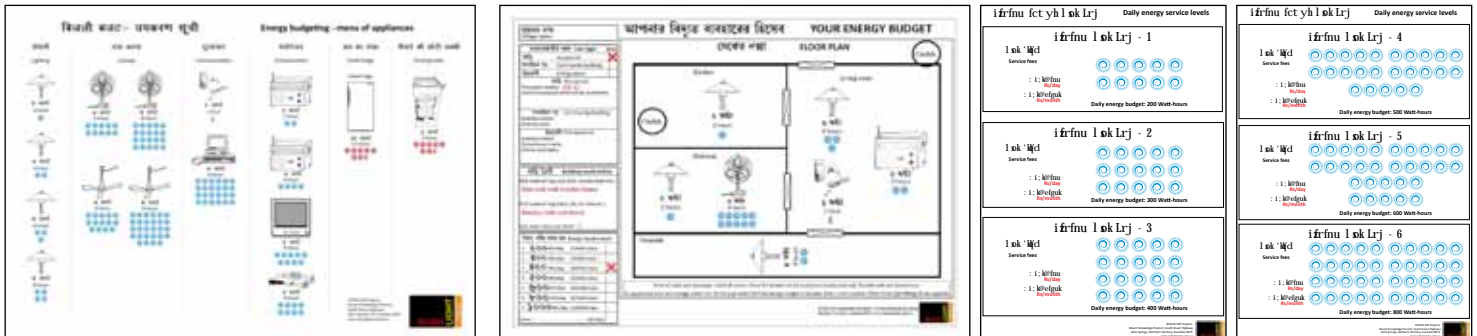
The Urja Bandhu is a small electrical unit that is programmed to make available a fixed amount of energy (Watt-hours) to a load point over a 24 hour period. The Urja Bandhu Programming module is used to programme the units *daily energy budget*, *budget reset time*, and internal *clock time*.

At the specified *budget reset time*, the unit makes the full *daily energy budget* available and all five display lights come on. As energy is used the lights go off, one after the other, just like a fuel gauge. If the entire budget is used before the reset time the next day, the bottom light turns red and power is temporarily disconnected. At the next *budget reset time*, all five lights come on again and the full budget is again available. Budgets are non-transferable from one day to the next.

When Urja Bandhus are connected to every load point the total daily demand is restricted to the aggregate of all programmed budgets. This prevents over-demand and helps ensure reliability of supply. Urja Bandhus therefore enables access to each connected building's agreed *daily energy budget* every day.



## ENERGY BUDGETING:



Energy budgeting is the process whereby consumers physically construct their own daily energy budget using appliance icons and a hand drawn floormap, compare their projected daily demand to the available service levels (Wh/day) and the costs associated with these (eg \$/month for 400Wh/day) before deciding on their final daily budget. The intuitive display on the Urja Bandhu neatly links in with the energy budgeting process, showing what proportion of the daily budget is available at any one time.

A socio-economic survey is carried out with consumers as part of the energy budgeting activity so they can accurately assess their current income and expenditure patterns and consider their livelihood aspirations and future needs before making the critical decision. Where consumers are first time users of electricity, a process of education and information about energy and energy services is also critical to ensuring people make informed decisions.

The Urja Bandhu comes with a full suite of image based supporting resources including installation manual, operation, maintenance and troubleshooting manual and basic operation poster.

Individualised energy budget posters can also be provided to consumers incorporating the menu of appliances reference chart, copies of their completed energy budget floorplan and signed user agreement.

