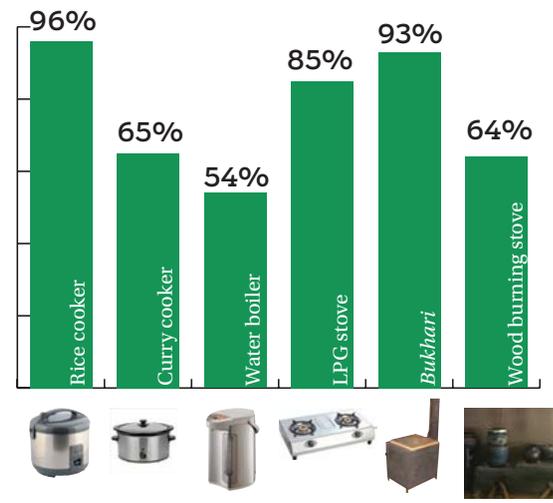


# In Rukubji, GridShare minimizes brownouts



A GridShare is installed in a Rukubji home

## Rukubji village, household items ownership survey



Survey: GridShare, summer 2011

PASSANG NORBU

A joint project by Humboldt State University, Bhutan Power Corporation and Department of Energy have minimized frequent brownouts or drop in voltage experienced in Rukubji, Wangduephodrang, which is powered by a 40 kW micro-hydro.

### POWER

A brownout is an intentional drop in voltage in an electrical power supply system used for load reduction in an emergency. It lasts for minutes or hours, as opposed to short-term voltage sag or dip. Brownouts are a common problem in micro-hydro mini-grid systems due to the limited power supply and the difficulty of restricting usage.

Around this time last year a pilot installation of GridShare, a device designed to alleviate brownouts by limiting peak power and encouraging load shifting to off-peak times, was carried out in a majority of the 90 households in Rukubji including surrounding communities like Bumiloo, Sangdo and Tsenpokto.

Each GridShare was worth

USD 60 covered through US \$ 75,000 technology design awarded to the team by the US Environmental Protection Agency. A plan was also purchased through the Royal Insurance Company of Bhutan (RICB) for USD 5,265 to provide coverage for a year.

The device installed at each household's electrical service entrance measured voltage and current consumption through two indicator lights, green and red. If the villagers attempted to use large appliances such as rice cookers during a brownout the red light glowed and GridShare disconnected power to the house until the appliance was turned off.

It enabled Rukubji residents to restrict use of high-powered electrical appliances, such as rice cookers and water boilers, to periods of low demand thereby helping stem disruptive brownouts during peak hours of usage which early morning and evening.

"Following the installation of the GridShares we found that severe brownouts has dropped by over 80 percent and average length of brownouts has substantially decreased," a graduate from Humboldt University,



## Now power is much more consistent"

A resident

Chimmi Dorji, who works at the Department of Hydro-Met services, said. Prior to GridShare installation, Rukubji's micro-hydro system was unable to meet the village's peak demand and brownouts were common during periods of peak load.

"During brownouts, 92 percent of the residents said that their rice cooker did not work properly, 63 percent complained that their television flickered, 71 percent complained of lights dimming and 42 percent said that fluorescent tube lights didn't work," added Chimmi Dorji. "While during peak hours it was difficult to meet the power demand, during off-peak hours there was surplus power that was dissipated by a dump load."

The stress on the system has been traced to meal times,

when the villagers' start up their electric rice and curry cookers. Rukubji experiencing such problems was an ideal place for the pilot project.

Rukubji residents said the GridShare is like a human, communicating the status of the grid and telling them the right and wrong paths to take. "Now power is much more consistent," a resident said.

Chimmi said that there are

more than 25 smaller micro hydro projects in the country that supply limited power to rural villages like Rukubji and as the villages get connected to the national grid, the micro hydro plant is of no use.

"We are at present discussing with BPC the possibility of using another device that can synchronize the micro hydro plants and the national grid," he said.



## INVITATION OF SEALED TENDER

### DRUKAIR CORPORATION LTD.

DA/ADM/007-2012/2523

Drukair Corporation Limited would like to invite sealed tender for supply of following item:

1. Office equipment
2. Office Furniture

Detailed terms and conditions are available from **Administration & Finance Division, Drukair Head Office, Paro (900 to 1700hours)**. Interested suppliers have to pay a fee of **Nu.100** for the documents. The sealed tenders may be submitted on **4th October, 2012** during office hours and will be opened on **5th October, 2012 at 10:30am**.

Further enquiry, please contact **Procurement Officer** at telephone no. **+975-8-271856/882** during office hours.

*Sr. Manager*