

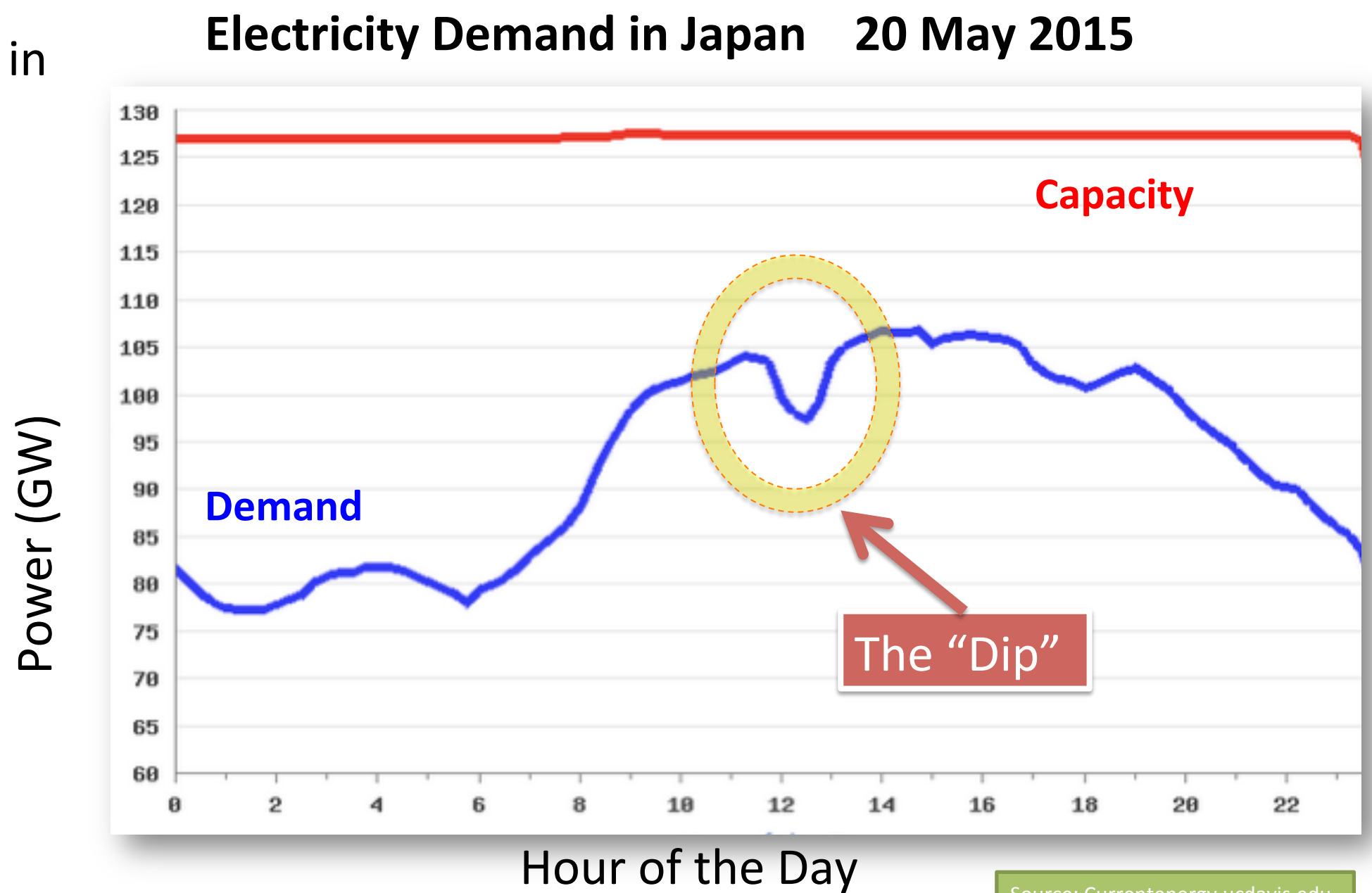
Japan's 6 GW Lunch Break

1 The Puzzle: Japan's Unusual Dip in Electricity Demand

Every weekday, Japan's electricity use dips about 6 GW at 12:00 and then climbs 6 GW at 13:00. This dip is similar in scale to the loss of the Fukushima nuclear plants and about half of Europe's lost PV output during the solar eclipse.

This dip corresponds to about 30 Watts/per person or 100 Watts/home. It is expensive for the utilities to service.

The dip is almost certainly linked to lunch, but from what sectors and why?



2 The Investigation

We collected evidence to explain the dip from a variety of sources.

We found that:

- ☑ Smaller dips occur in Korea and Taiwan but not present in US or Europe → Cultural influence?
- ☑ The dip occurs in winter and summer → Not an AC effect
- ☑ The dip occurs only on weekdays → Not caused by residential sector
- ☑ Heavy industry operations don't stop for lunch → Not caused by heavy industry
- ☑ Landline telephone traffic dips, but mobile is constant → Correlated to office activities
- ☑ School lunch begins at 12:30 → Not caused by schools

3 The Explanation: It's the Commercial Sector

The evidence points to the commercial sector being responsible for the dip. The dip corresponds to ~100 Watts/person in commercial buildings.

The government and many companies urge staff during lunch to:

- Switch off lights
- Switch off ACs
- Switch off computers and other IT equipment

Surveys found that >50% of staff in commercial buildings switch off lights during lunch break

4 Conclusions

This investigation solved a mystery but it also shows that:

- Behavior affects national electricity use in unexpected ways (but how much is caused by culture?)
- Electricity-saving behaviors can be learned
- Electricity-saving behaviors can be sustained

No Lunch Dips in California or England

