	Observed (seconds)	Expected (seconds)
On-peak period	0	55.2
Mid-peak period	0	41.4
Off-peak period	0	69.1

Table 5: Comparison of loss durations observed in numerical simulation and expected from the teletraffic theory.

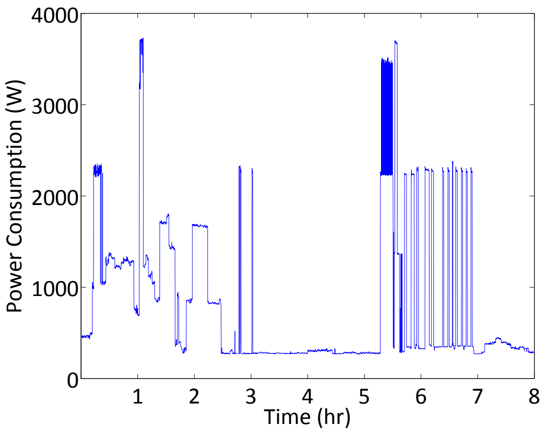

Figure 6: On-peak load measured from a house in class 1

This is done simply by summing the actual measured load from each home at each time instant and checking if this sum exceeds the transformer sizing. If our models are representative, then the probability of overflow computed using teletraffic theory should be an upper bound on the numerical estimate. Table 5 shows the results, indicating that our reference models are representative, at least for the purpose of transformer sizing in the electrical grid. This result, though positive, does not give a good 'feel' for our models. A less analytical, but still useful, validation is by visual inspection. Figure 6 shows actual measurements of on-peak loads of a home in class 1 obtained from the test data set. We see that it is similar to the on-peak home load generated from the on-peak model of class 1 (Figure 7). This was true for all of our other models as well.

7. CONCLUSION

This paper reports very encouraging preliminary results on load modelling. Using an existing classification, we derive per class k-state Markovian reference models for different periods of the day. We show that none of these models need more than 6 states. We also show that these models are accurate enough for transformer sizing in the distribution network.

8. REFERENCES

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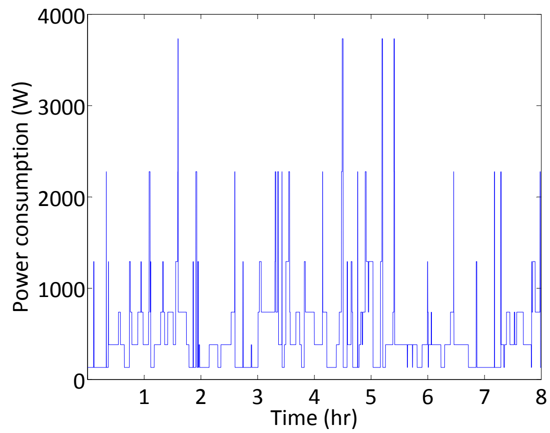

Figure 7: On-peak load trace generated from the on-peak model of class 1

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