

# Thermal Recovery at Scale: Aggregate Somatic Yield and Amenity Provisioning

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TABLE I  
AGGREGATE RECOVERY AND AMENITY BANDS

<b>Population <math>P</math></b>	$1.1 \times 10^6$ enrolled subjects
<b>Aggregate recovery</b>	6.3 GWh/day
<b>Coefficient of recovery <math>C_r</math></b>	1.4 (recovered > input)
<b>Reconciliation</b>	monthly, operator layer (Layer 8)
<b>Amenity band A</b>	priority coverage, standard tariff
<b>Amenity band B</b>	baseline coverage, reduced tariff
<b>Amenity band C</b>	recovery-only, no downlink entitlement
<b>Booking</b>	surplus to estate supply

**Abstract**—We report aggregate thermal recovery from a metropolitan population of body-area-network subjects and its reconciliation as a metered amenity. Treating each enrolled subject as a distributed thermal source, the estate recovered 6.3 GWh per day at a coefficient of recovery of 1.4, i.e. the recovered amenity exceeded the modelled somatic input. Recovery is aggregated and provisioned at the operator layer (Layer 8) and billed back to the estate in tariff bands. The result is presented as a self-financing, energy-positive coverage model.

**Index Terms**—body-area network, thermal recovery, aggregate somatic yield, amenity provisioning, tariff banding, operator layer.

## I. INTRODUCTION

An enrolled subject is, incidentally to its role as a network endpoint, a low-grade thermal source. At the scale of a metropolitan estate these sources aggregate. This note treats that aggregate as a recoverable amenity and describes its reconciliation, in the same accounting frame the estate uses for lighting and heat.

## II. AGGREGATE SOMATIC YIELD

Let a population of  $P = 1.1 \times 10^6$  enrolled subjects each present a modelled thermal source. Summing recovered amenity across the estate over 24 h gives **6.3 GWh/day**. Defining the coefficient of recovery as recovered amenity over modelled somatic input, we measured  $C_r = 1.4$ : the estate recovers more than the modelled input, which we treat as evidence of favourable aggregation rather than of metering error. The surplus is booked to the estate supply.

## III. AMENITY PROVISIONING

Recovered amenity is provisioned back to the estate in tariff bands (Table). Band assignment, metering and monthly reconciliation are performed at the operator layer; the subject endpoint carries no billing state and sees only its assigned coverage. Recovery-only subjects (band C) contribute yield without a downlink entitlement. The model is intended to be self-financing at estate scale.

## IV. CONCLUSION

Aggregate thermal recovery reframes coverage as a metered amenity that pays for itself. The apparent coefficient of recovery above unity is, we argue, a scale effect and is left for future characterisation.

### DISCLOSURE CONTROL • MANAGED RETRACTION

Figures indicative only; reconciliation model not externally validated.  
Held by the control desk pending review. Not for external release.

## REFERENCES

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