Monthly Usage Normalization (Proration) for Non-Aligned Billing Periods

1 Purpose

When a billing period spans two or more calendar months, the total metered usage must be proportionally allocated to each month according to the number of days that fall within that month. This ensures accurate month-over-month comparisons and correct period-based reporting.

2 General Formula

Let:

- U = total usage for the billing period

- D_1 = number of days in the billing period belonging to Month 1

- D_2 = number of days in the billing period belonging to Month 2

- $D = D_1 + D_2$ = total days in the billing period

Then:

$$U_{\text{Month 1}} = \left(\frac{D_1}{D}\right) \times U \tag{1}$$

$$U_{\text{Month 2}} = \left(\frac{D_2}{D}\right) \times U \tag{2}$$

or equivalently (since $D_2 = D - D_1$):

$$U_{\text{Month 2}} = U - U_{\text{Month 1}} \tag{3}$$

3 Bill 1: December 2023 – January 2024 Billing Period

Invoice start date	12/06/2023
Invoice end date	01/18/2024
Total usage U	17476
Days in December 2023	$D_{\text{Dec}} = 26$
Days in January 2024	$D_{\text{Jan}} = 18$
Total days D	44

Allocation using (1) and (2):

$$U_{\text{Dec 2023}} = \frac{26}{44} \times 17476$$
$$= 0.590909\ldots \times 17476$$
$$= \mathbf{10326.7272}\ldots \approx \mathbf{10326.73}$$

$$U_{\text{Jan 2024}} = \frac{18}{44} \times 17476$$
$$= 0.409090\ldots \times 17476$$
$$= \mathbf{7149.2727}\ldots \approx \mathbf{7149.27}$$

Note: $10326.73 + 7149.27 = 17476.00$ (exact within rounding).

4   Bill 2: January 2024 − February 2024 Billing Period

Invoice start date	01/19/2024
Invoice end date	02/16/2024
Total usage U	11721.4
Days in January 2024	$D_{\text{Jan}} = 13$
Days in February 2024	$D_{\text{Feb}} = 16$
Total days D	29

Allocation:

$$U_{\text{Jan 2024 (second invoice)}} = \frac{13}{29} \times 11721.4$$
$$= 0.448275\ldots \times 11721.4$$
$$= \mathbf{5254.42}$$

$$U_{\text{Feb 2024}} = \frac{16}{29} \times 11721.4$$
$$= 0.551724\ldots \times 11721.4$$
$$= \mathbf{6466.98}$$

Again, $5254.42 + 6466.98 = 11721.40$ (exact within displayed precision).

5   Total January 2024 Usage

To obtain the full January 2024 monthly total, sum the January portions from both overlapping invoices:

$$U_{\text{Jan 2024, total}} = 7149.27 + 5254.42 = \mathbf{12403.69}$$

6   Remarks

- This explanation assumes two relevant months, but the same month normalization logic is extended when bills span three months, or when multiple bills occur in the same month.

- The method is linear and fully reversible.