☀ Solar Calculator – Formula Document

This document outlines the logical formulas, parameters, and calculation steps required to build the Solar Calculator for residential and commercial use.

1. User Input Section

To initiate the calculation, the system requires the following primary input from the user:

- **Primary Input:** Present Monthly Electricity Bill (₹)

2. Output Parameters

The calculator will generate the following outputs for both Residential and Commercial profiles:

- Ideal System Size (kW)
- Annual Savings (₹/year)
- Annual Energy Generation (Units/year)
- Roof Space Required (sq.ft)
- System Price (Excluding Subsidy & GST)
- Subsidy + Discounts (where applicable)
- Effective Cost (₹)

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3. 🏠 RESIDENTIAL SOLAR CALCULATOR

Step 1: Ideal System Size (kW)

Rule: If the bill is less than ₹1190, the system size is 1 kW. For higher bills, it is calculated based on multiples of ₹1190.

```
System Size (kW) = CEILING ( Bill / 1190 )
```

**CEILING means round up to the next whole number.*

Step 2: Annual Savings

```
Annual Savings = Monthly Bill × 12
```

Step 3: Annual Energy Generation

Annual Units Generated (kWh) = System Size × 1440

Step 4: Roof Space Required

Roof Area (sq.ft) = System Size × 80

Step 5: System Price (Excl. Subsidy & GST)

System Price = System Size × Price per kW

Step 6: Subsidy Slab

System Size	Subsidy Amount
1 kW	₹30,000
2 kW	₹60,000
≥ 3 kW	₹78,000

Step 7: Green India Discount

Flat Discount = ₹22,000

Step 8: Total Subsidy + Discount

Total Benefit = Subsidy + 22,000

Step 9: Effective Cost (Customer Pays)

Effective Cost = System Price – Total Benefit

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4. 🏢 COMMERCIAL SOLAR CALCULATOR

Key Differences:

- ❌ No subsidy
- Only Green India discount
- ✅ Different billing multiplier (930)

Step 1: Ideal System Size (kW)

Rule: System size based on ₹930 multiplier.

```
System Size (kW) = CEILING ( Bill / 930 )
```

Step 2: Annual Savings

```
Annual Savings = Monthly Bill × 12
```

Step 3: Annual Energy Generation

```
Annual Units Generated = System Size × 1440
```

Step 4: Roof Space Required

```
Roof Area = System Size × 80
```

Step 5: System Price (Excluding GST)

```
System Price = System Size × Price per kW
```

Step 6: Effective Cost

```
Effective Cost = System Price
```

(No subsidy or discounts applicable)

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5. ✓ Recommended Display Format

For the final report generated for the user, ensure the following fields are clearly displayed:

- System Size
- Annual Savings
- Units Generated
- Roof Space
- Price
- Subsidy (Residential only)
- Discount (Residential only)
- **Effective Cost**

6. ✓ Example Calculation (Residential)

Scenario: Monthly Bill = **₹3,000**

Parameter	Calculation / Value
System Size	3000 / 1190 = 2.52 → Rounded up = **3 kW**
Annual Savings	3000 × 12 = **₹36,000**
Units Generated	3 × 1440 = **4,320 kWh**
Roof Space	3 × 80 = **240 sq.ft**
Subsidy	Category ≥ 3 kW = **₹78,000**
Green India Discount	Flat Rate = **₹22,000**
Total Benefit	78,000 + 22,000 = **₹1,00,000**

7. Sample website

www.freryenergy.com