

# 1 What information do we need from the user?



## Customer Details

1. Customer Name
2. Customer ID / Meter Number
3. Country
4. State
5. City/Town (optional)

*(Country and State are required because rates and taxes differ by location.)*



## Electricity Usage Details

6. Previous Meter Reading (kWh)
7. Current Meter Reading (kWh)



## Solar Power Details

8. Solar Units Exported to Grid



## Rate & Charges Details

9. Grid Rate per Unit
10. Solar Export Credit Rate
11. Fixed Charges
12. Tax Percentage
13. Subsidy (if any)

## 2. What calculations need to be done?

### Step 1: Calculate Total Units Consumed

$\text{Total Units Consumed} = \text{Current Reading} - \text{Previous Reading}$

### Step 2: Calculate Grid Energy Charge

$\text{Grid Energy Charge} = \text{Total Units Consumed} \times \text{Grid Rate}$

### Step 3: Calculate Solar Credit

$\text{Solar Credit} = \text{Solar Units Exported} \times \text{Solar Credit Rate}$

### Step 4: Add Fixed Charges

$\text{Subtotal} = \text{Grid Energy Charge} + \text{Fixed Charges}$

### Step 5: Calculate Tax

$\text{Tax Amount} = (\text{Subtotal} \times \text{Tax Percentage}) / 100$

### Step 6: Calculate Final Bill Amount

$\text{Final Bill Amount} = \text{Subtotal} + \text{Tax Amount} - \text{Solar Credit} - \text{Subsidy}$

### 3. What result should be shown?

The program should display:

#### **Location Details**

- Country
- State

#### **Usage Details**

- Total Units Consumed
- Solar Units Exported

#### **Charges Breakdown**

- Grid Energy Charge
- Fixed Charges
- Tax Amount
- Solar Credit
- Subsidy
- **Final Electricity Bill Amount Payable**

## **Part 2: Step-by-Step Instructions (Recipe Style)**

**Step 1:** Ask the user:  
**"What is your name?"**

**Step 2:** Ask the user:  
**"What is your Customer ID or Meter Number?"**

**Step 3:** Ask the user:  
**"Which country do you live in?"**

**Step 4:** Ask the user:  
**"Which state do you live in?"**

**Step 5:** Ask the user:  
**"What is your previous meter reading?"**

**Step 6:** Ask the user:  
**"What is your current meter reading?"**

**Step 7:** Ask the user:  
**"How many solar units did you export to the grid?"**

**Step 8:** Ask the user:  
**"What is the grid rate per unit?"**

**Step 9:** Ask the user:  
**"What is the solar credit rate per unit?"**

**Step 10:** Ask the user:  
**"What are the fixed charges?"**

**Step 11:** Ask the user:  
**"What is the tax percentage?"**

**Step 12:** Ask the user:

**"Is there any subsidy amount?"**

## Now Perform the Calculations

**Step 13:** Calculate total units consumed:

Total Units = Current Reading – Previous Reading

**Step 14:** Calculate grid energy charge:

Grid Energy Charge = Total Units × Grid Rate

**Step 15:** Calculate solar credit:

Solar Credit = Solar Units Exported × Solar Credit Rate

**Step 16:** Add fixed charges:

Subtotal = Grid Energy Charge + Fixed Charges

**Step 17:** Calculate tax:

Tax Amount = (Subtotal × Tax Percentage) ÷ 100

**Step 18:** Calculate final bill:

Final Bill = Subtotal + Tax Amount – Solar Credit – Subsidy

**Step 19:** Check if the final bill is less than 0.

If yes:

Set Final Bill = 0

(Because the bill cannot be negative.)

If no:

Keep the bill as calculated.

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**Step 20:** Display the complete bill:

- Customer Name
- Country
- State
- Total Units Consumed
- Solar Units Exported
- Grid Energy Charge
- Fixed Charges
- Tax Amount
- Solar Credit
- Subsidy
- **Final Electricity Bill Amount**

# Electricity Bill Calculation (With Solar Credit)

## Customer Details

- Name: Ajey
- Country: India
- State: Tamil Nadu

## Given Data

- Previous Meter Reading = **1200 units**
- Current Meter Reading = **1450 units**
- Grid Rate per Unit = **₹6 per unit**
- Solar Units Exported = **40 units**
- Solar Credit Rate = **₹4 per unit**
- Fixed Charges = **₹150**
- Tax Percentage = **5%**
- Subsidy = **₹100**

# Step-by-Step Calculation

## Step 1. Calculate Total Units Consumed

$\text{TotalUnits} = \text{CurrentReading} - \text{PreviousReading}$

$\text{TotalUnits} = 1450 - 1200$

$\text{TotalUnits} = 250 \text{ units}$

## Step 2. Calculate Grid Energy Charge

$\text{GridEnergyCharge} = \text{TotalUnits} \times \text{Rate per Unit}$

$\text{GridEnergyCharge} = 250 \times 6$

$\text{GridEnergyCharge} = ₹1500$

## Step 3. Calculate Solar Credit

$\text{SolarCredit} = \text{SolarUnitsExported} \times \text{SolarCreditRate}$

$\text{SolarCredit} = 40 \times 4$

$\text{SolarCredit} = ₹160$

## Step 4. Add Fixed Charges

$\text{Subtotal} = \text{GridEnergyCharge} + \text{FixedCharges}$

$\text{Subtotal} = 1500 + 150$

$\text{Subtotal} = ₹1650$

## Step 5. Calculate Tax (5%)

$\text{Tax Amount} = (\text{Subtotal} \times \text{Tax \%}) / 100$

$\text{Tax Amount} = (1650 \times 5) / 100$

$\text{Tax Amount} = ₹82.50$

## Step 6. Calculate Final Bill Amount

$\text{Final Bill} = \text{Subtotal} + \text{Tax} - \text{Solar Credit} - \text{Subsidy}$

$\text{Final Bill} = 1650 + 82.50 - 160 - 100$

$\text{Final Bill} = ₹1472.50$

# Final Electricity Bill Amount

**₹1472.50**