Town of Eagle EEOP Directions

EEOP Calculator Sample Project Video

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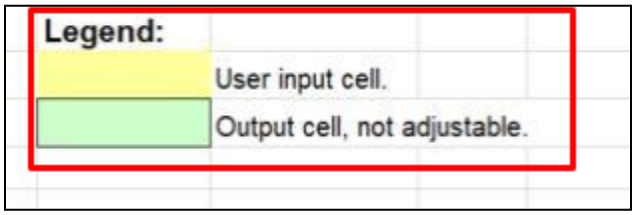
Part 1: Pre-Directions:

The Legend:

- Yellow-shaded cells: User inputs data; Only cells that are editable.
- Green-shaded cells: Output cells from formulas; Cannot edit.



Sheet Names:

- **REEOP** = Residential Exterior Efficiency Offset Program worksheet
- **CEEOP** = Commercial Exterior Efficiency Offset Program worksheet
- **PV Generation** = Photovoltaic generation (energy generation from solar panels) worksheet
- **HP** = Heat pump worksheet
- **Alt Energy Source** = Alternative energy source worksheet (for energy production types such as wind, hydroelectric, off-site PV, or other)
- **Background Calcs** = Background calculations used in the formulas for value outputs (for reference only)
- **Solar Derate Calculations** = Background calculations for PV Generation sheet (for reference only)

Part 2: REEOP & CEEOP Directions:

Step 1: REEOP vs. CEEOP

- Choose the REEOP sheet if this is a residential project.
- Choose the CEEOP sheet if this is a commercial project.

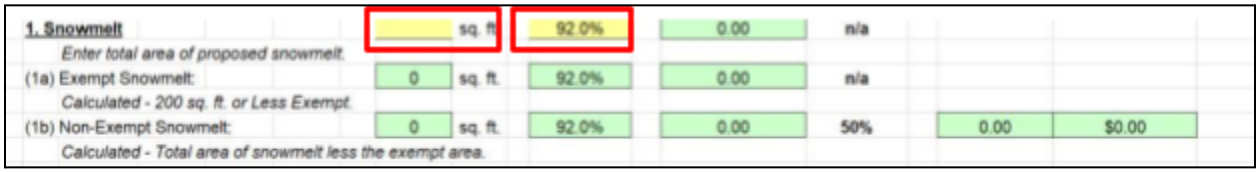
- NOTE: Both sheets will auto-populate some data, but you can only use one sheet or the other. While the sheets look very similar, no project should use both sheets.

Step 2: Input Project Name

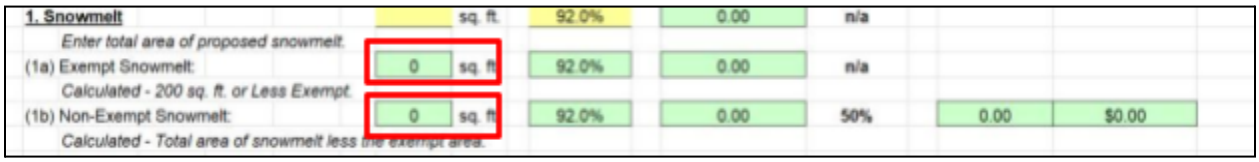
- Input the name of the project into yellow shaded cells at the top (E7)

Step 3: Snowmelt Calculations (if applicable)

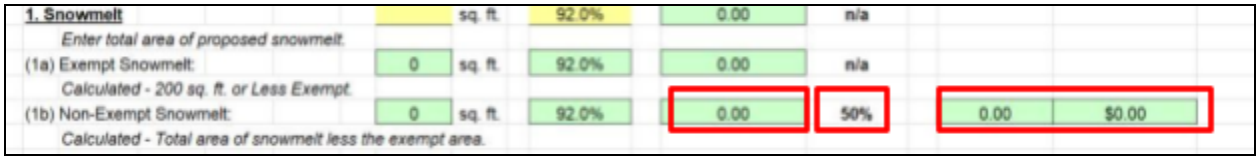
- Locate Application #1: Snowmelt. (C13)
- Input the total area (square feet) of proposed snowmelt into the yellow shaded cell (I13)
- Select the efficiency rating of the proposed snowmelt system from the dropdown menu. The dropdown menu appears once you click the cell. (L13)
    - *If it is an all-electric system, enter 100% for the efficiency rating.*



- The exempted snowmelt will automatically be deducted from the total amount of proposed snowmelt (I15)
- The total area of non-exempt proposed snowmelt will auto populate into cell I17

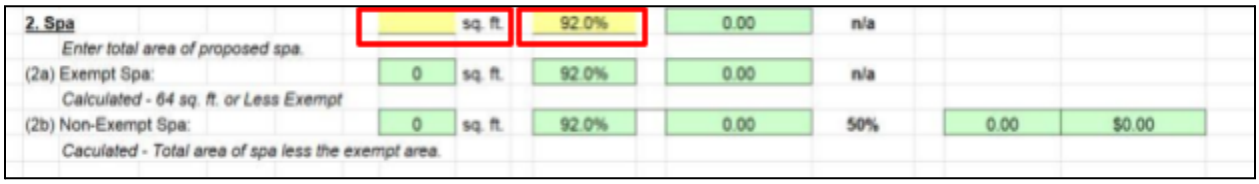


- The spreadsheet will then automatically calculate the kilowatts of solar PV required to fully offset the non-exempt proposed snowmelt. (N17)
- The spreadsheet will then automatically calculate the solar PV offset (Q17) after the 50% offset (O17) is applied.
- The spreadsheet will then automatically calculate the associated payment in lieu for the solar PV offset. (R17)

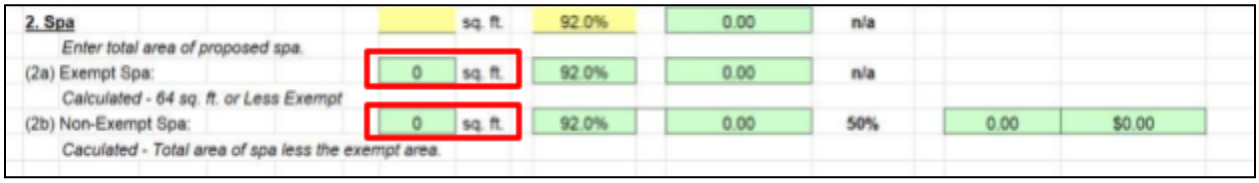


Step 4: Spa Calculations (if applicable)

- Locate Application #2: Spa. (C20)
- Input the total area (square feet) of the proposed spa into the yellow shaded cell. (I20)
- Select the efficiency rating of the proposed spa from the dropdown menu. The dropdown menu appears when you click the cell. (L20)
    - *If it is an all-electric system, enter 100% for the efficiency rating.*



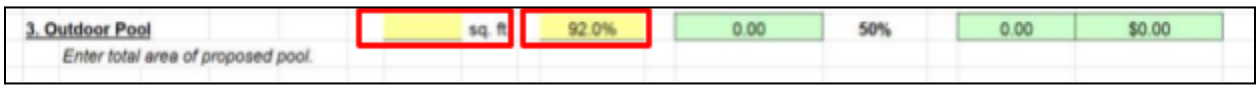
- The exempted spa square footage will automatically be deducted from the total square feet of proposed spa. (I22)
- The total area of non-exempt proposed spa will auto populate into cell I24.



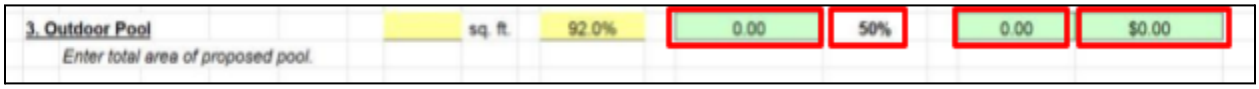
- The spreadsheet will then automatically calculate the kilowatts of solar PV required to fully offset the non-exempt proposed spa. (N24)
- The spreadsheet will then automatically calculate the solar PV offset (Q24) after the 50% offset (O24) is applied.
- The spreadsheet will then automatically calculate the associated payment in lieu for the solar PV offset. (R24)

Step 5: Outdoor Pool Calculations (if applicable)

- Locate Application #3: Outdoor Pool. (C27)
- Input the total area (square feet) of the proposed outdoor pool into the yellow shaded cell. (I27)
- Select the efficiency rating of the proposed outdoor pool. (L27)
    - *If it is an all-electric system, enter 100% for the efficiency rating.*

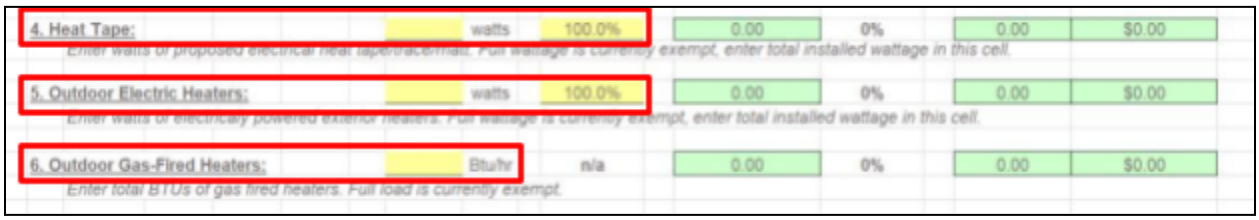


- The spreadsheet will then automatically calculate the kilowatts of solar PV required to fully offset the proposed outdoor pool. (N27)
- The spreadsheet will then automatically calculate the solar PV offset (Q27) after the 50% offset (O27) is applied.
- The spreadsheet will then automatically calculate the associated payment in lieu for the solar PV offset. (R27)



Step 6: Disregard the Calculations for Heat Tape, Outdoor Electric Heaters, & Outdoor Gas-Fired Heaters

- Heat tape, outdoor electric heaters, and outdoor gas-fired heaters are not part of the EEOP program, and therefore are grayed out.
- If any information is put in the yellow boxes for those applications, the offset will not be calculated.



Step 7: Outdoor Gas Fireplaces & Firepits Calculations (if applicable)

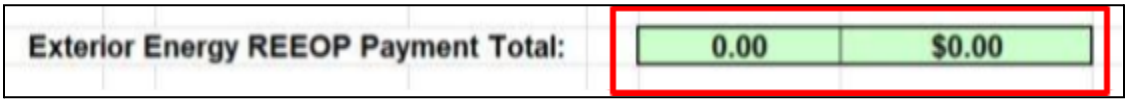
- Locate Application #7: Outdoor Gas Fireplaces & Fire Pits. (C39)
- Input the total Btu/hr of proposed outdoor fireplaces/firepits into the yellow shaded cell. (I39)

- The spreadsheet will then automatically calculate the kilowatts of solar PV required to fully offset the proposed fireplace/firepit. (N39)
- The spreadsheet will then automatically calculate the solar PV offset (Q39) after the 100% offset (O39) is applied.
- The spreadsheet will then automatically calculate the associated payment in lieu for the solar PV offset. (R39)

Step 8: Calculate Total EEOP Payment

- The total required PV kW offset from any proposed snowmelt, spa, outdoor pool, and/or outdoor gas fireplace/firepit will be summed. (Q42)

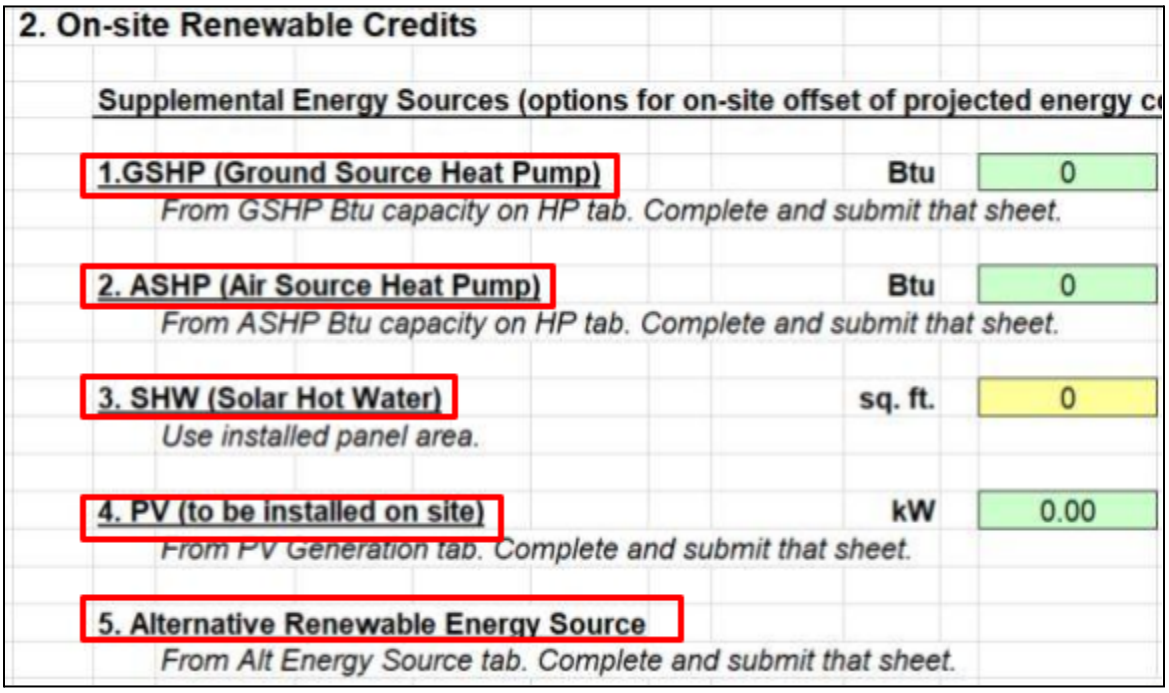
- The total required payment in lieu from any proposed snowmelt, spa, outdoor pool, and/or outdoor gas fireplace/firepit will be summed. (R42)



Part 3: On-Site Renewable Credits Calculation

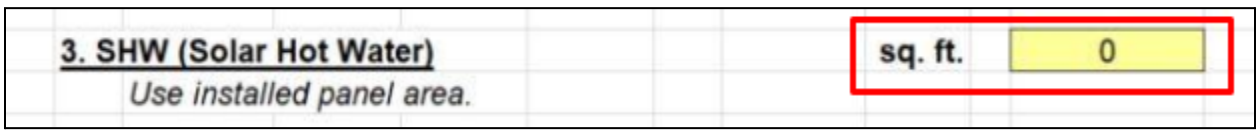
Step 1: Identify Supplemental Energy Sources (if applicable)

- Identify supplemental energy sources (if applicable) that will contribute to offsetting projected exterior energy consumption.
    - Options include: Ground source heat pump, air source heat pump, solar hot water, solar PV, alternative renewable energy sources.



Step 2: Input Data into Correct Sheet

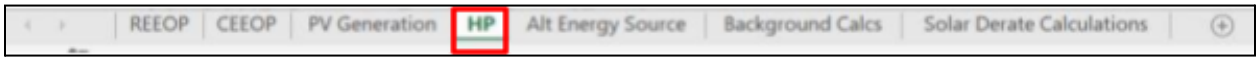
- For Ground Source or Air Source Heat Pumps, go to **Part 4.**
- For Solar PV, go to **Part 5.**
- For Alternative Renewable Energy Source (other than on-site solar PV), go to **Part 6.**
- For solar hot water, input the total square footage into **cell L55.**



Part 4: Ground Source or Air Source Heat Pumps

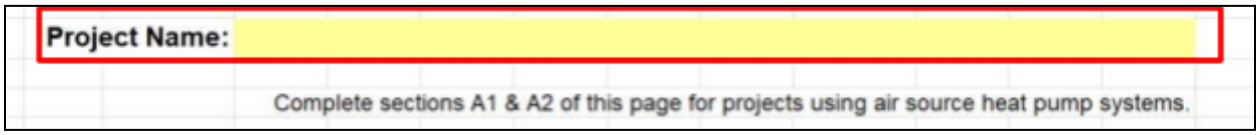
Step 1: Open the "HP" sheet

- Select the HP sheet from the tabs at the bottom.



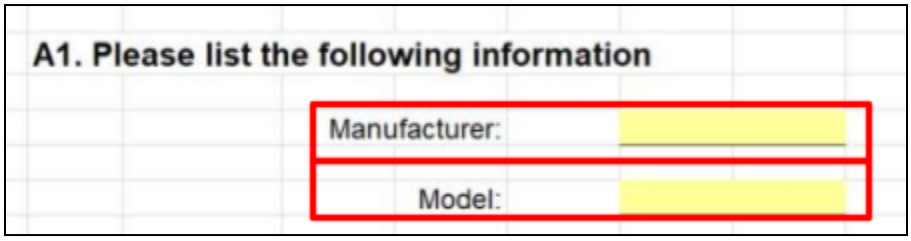
Step 2: Input Basic Information

- Add the project name into cell E7.



Step 3: Air Source Heat Pump (ASHP) (if applicable)

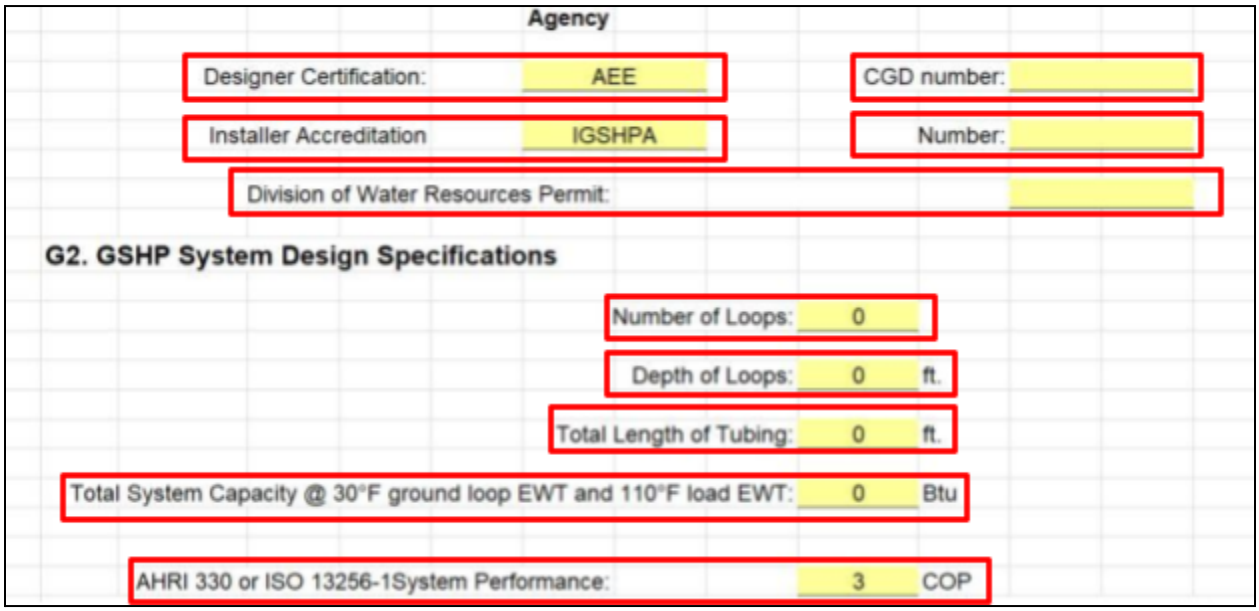
- Complete sections A1 and A2 if the project includes an air source heat pump.
- List the heat pump's model and manufacturer in cells H13 and H15 respectively.
- Input the total system capacity at -5° F OAT in Btu's into cell K19.
- Input the system coefficient of performance (COP) into cell K22.
- Excel will automatically calculate the Btu's from the heat pump and the equivalent solar PV offset and credit. Those numbers will automatically be entered into the EEOP sheet, cells L52, Q52, and R52.
    - Note: These calculations are done using data in the "Background Calcs" sheet.



Step 4: Ground Source Heat Pump (GSHP) (if applicable)

- Complete sections G1-G3 if the project includes a ground source heat pump.

- List the heat pump's designer certification (H31), the designer's certification number (M31), installer accreditation (H33), installer accreditation number (M33), and Division of Water Resources permit number (M35).
- Input the heat pump's system design specifications, including the number of loops (K39), the depth of the loops (K41), the total length of tubing (K43), the total system (per the specifications) (K45), and the coefficient of performance (K48).
- When you submit the EEOP document, include the following documents:
    - GSHP unit performance sheets certified by AHRI 330 or ISO 13256-1 for all specified GSHP units, with capacity at design conditions highlighted.
    - Designer Certification Sheets
    - Installer Certification Sheets
    - Division of Water Resource Permit
    - Plans prepared by IGSHPA certified designer or Professional Engineer showing planned configuration of ground loop exchanger and heating/cooling plant with all equipment specified, pipe sizes called out and a detailed Control Sequence of operation.
- Include who the plans were prepared by (F66), their email address (F67), and their phone number. (F68)
- Excel will automatically calculate the Btu's from the heat pump and the equivalent solar PV offset and credit. Those numbers will automatically be entered into the EEOP sheet, cells L49, Q49, and R49.
    - Note: These calculations are done using data in the "Background Calcs" sheet.



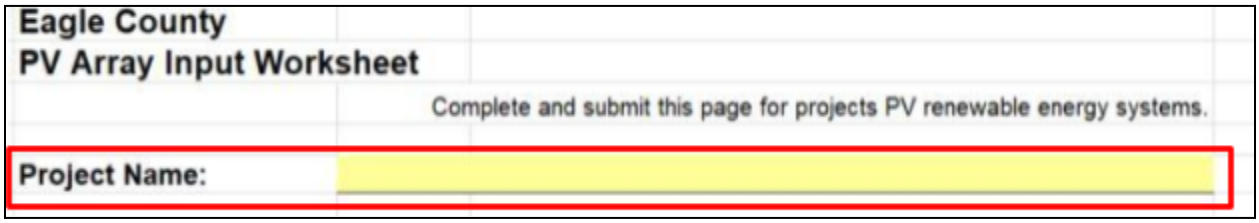
Part 5: Solar PV

Step 1: Open the "PV Generation" Sheet

- Select the PV Generation sheet from the tabs at the bottom.

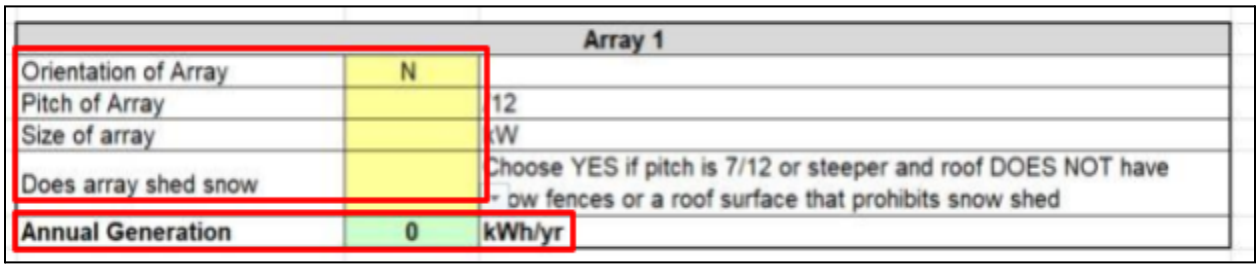
Step 2: Project Name

- Input the project's name into cell C6.



Step 3: Array Calculations

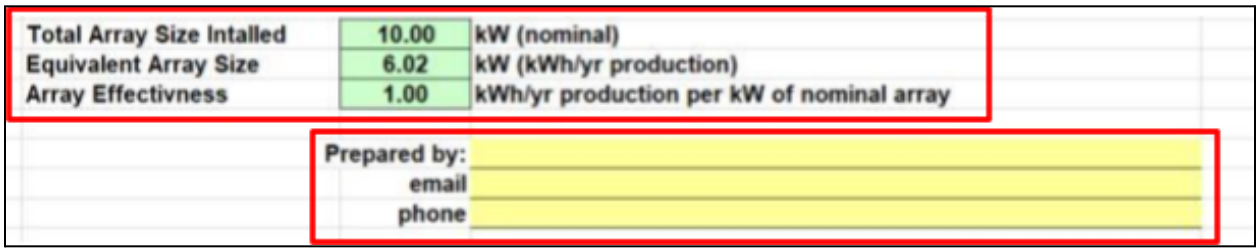
- Select the orientation of the array from the dropdown menu. The dropdown menu appears once you click into the cell (C18).
    - Note: the orientation angles are provided in the chart to the right.
- Select the pitch of the array from the dropdown menu. The dropdown menu appears once you click into the cell (C19).
- Input the size of the array in kW. (C20)
- Select whether or not the array sheds snow from the dropdown menu. Options are YES or NO, and these appear once you click into the cell (C21).
    - NOTE: to shed snow, the array must have a pitch of 7/12 or greater and not have snow fences or a roof surface that prohibits snow shed.
- The annual generation from the solar array (based on your inputs) will be automatically calculated into cell C22.
    - NOTE: This calculation is done using data in the Solar Derate Calculations sheet.
- Repeat this process for each array (up to 4 arrays total).



Step 4: Totals

- Total array size installed (for all arrays entered) will automatically calculate in cell C45.
    - Total array size will also automatically be entered into L58 on the EEOP sheet.
- Total equivalent array size (for all arrays entered) will automatically calculate in cell C46.

    - Total equivalent array size will also automatically be entered into Q58 on the EEOP sheet. This calculation is done using data in the “Background Calcs” sheet.
    - The corresponding credit applied based on the equivalent array size will be entered into cell R58 on the EEOP sheet.
- Array effectiveness (for all arrays entered) will be automatically calculated in cell C47.
- Input the preparer's name, email, and phone number into cells D49, D50, and D51, respectively.



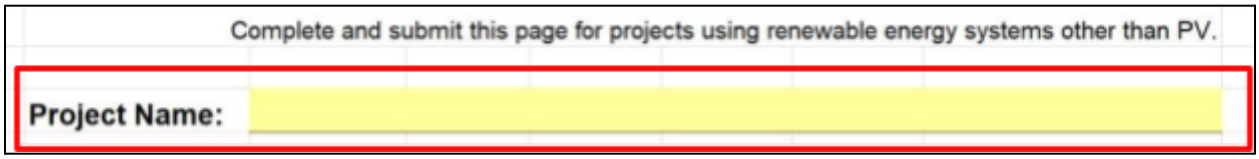
Part 6: Alternative Renewable Energy Sources

Step 1: Open the “Alt Energy Source” Sheet

- Select the “Alt Energy Source” sheet from the tabs at the bottom.

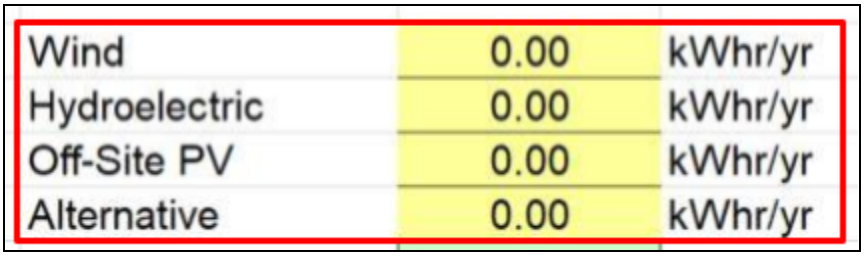
Step 2: Project Name

- Input the project’s name into cell C7.



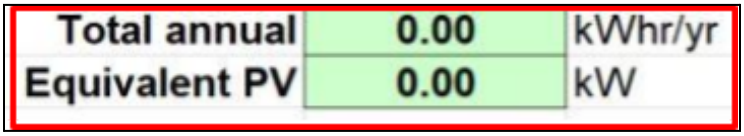
Step 3: Input Energy Produced

- Input the amount of wind, hydroelectric, off-site solar PV, and other alternative energy sources produced into the corresponding cell (C11, C12, C13, C14). Required units are listed next to the input cells (kWhr/yr).

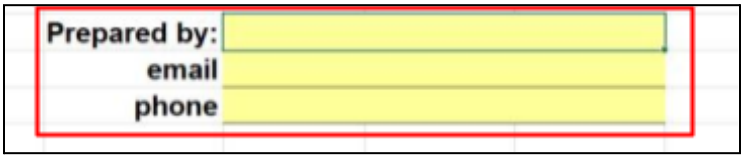


Step 3: Totals

- The total annual kWh/yr from all alternative energy sources will be summed in cell C15.
- The equivalent solar PV will be calculated and automatically inputted into cell C16.
    - The equivalent solar PV number will also be automatically calculated into cell Q61 on the EEOP sheet. This calculation is done using data in the “Background Calcs” sheet.
    - The corresponding credit from the equivalent solar PV number will be automatically inputted into cell R61 on the EEOP sheet.
- Input the preparer's name, email, and phone number into cells D20, D21, and D22, respectively.



Total annual	0.00	kWhr/yr
Equivalent PV	0.00	kW

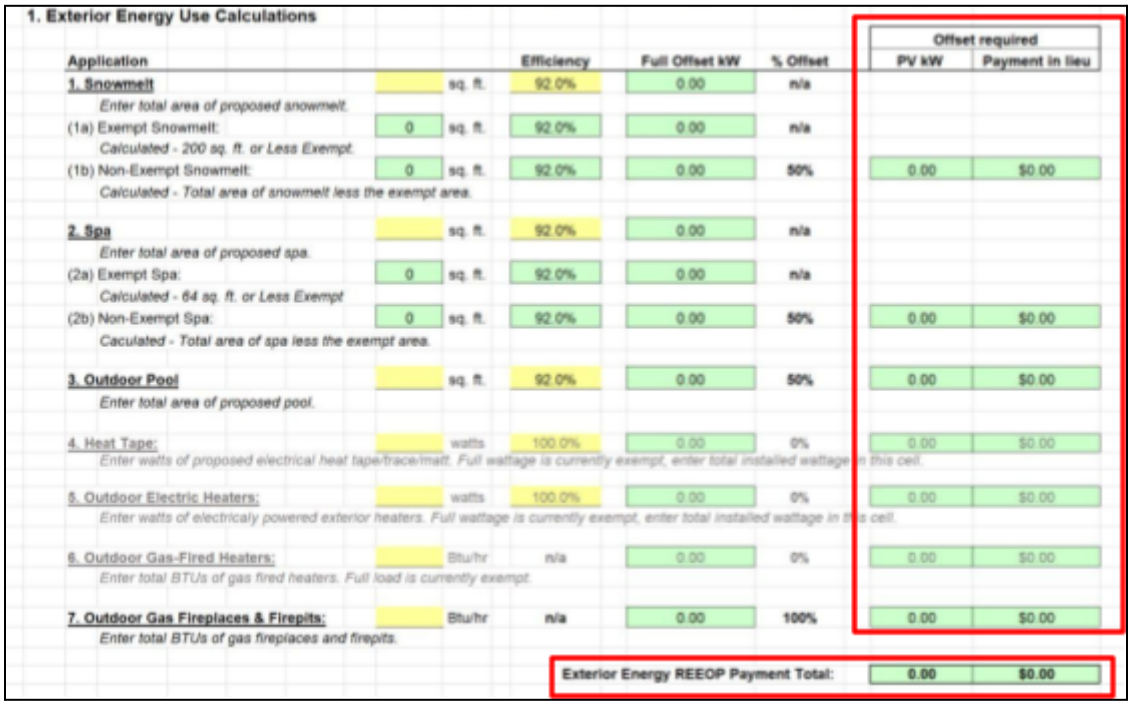


Prepared by:	
email	
phone	

Part 7: Final Calculations

Step 1: Exterior Energy Use Calculation Totals

- The total solar PV offset required and payment in lieu from all exterior energy uses (snowmelt, spa, outdoor pool, & outdoor gas fireplaces/fire pits) in the project will be totaled into cells Q42 and R42 respectively.

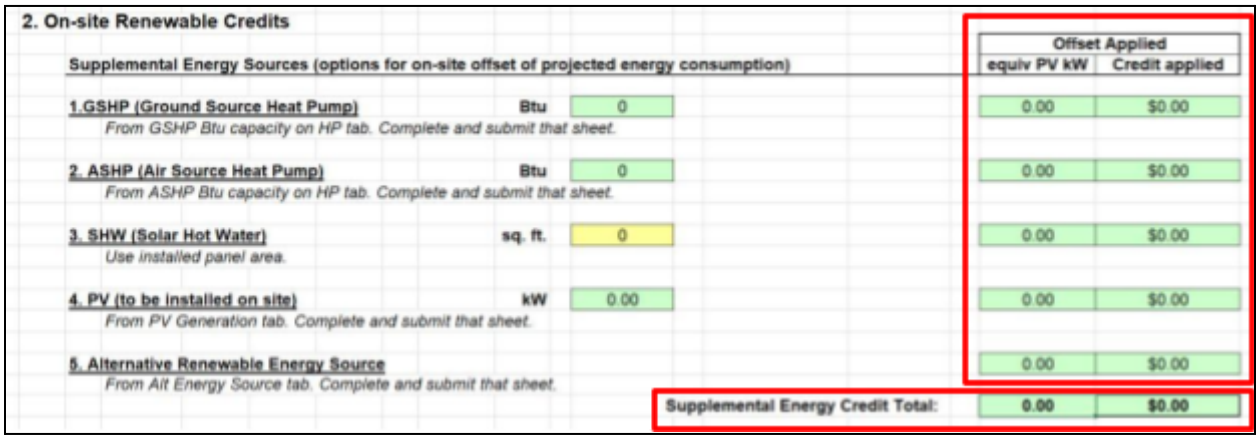


1. Exterior Energy Use Calculations

Application			Efficiency	Full Offset kW	% Offset	Offset required: PV kW	Offset required: Payment in lieu
1. Snowmelt		sq. ft.	92.0%	0.00	n/a		
Enter total area of proposed snowmelt.							
(1a) Exempt Snowmelt:	0	sq. ft.	92.0%	0.00	n/a		
Calculated - 200 sq. ft. or Less Exempt.							
(1b) Non-Exempt Snowmelt:	0	sq. ft.	92.0%	0.00	50%	0.00	$0.00
Calculated - Total area of snowmelt less the exempt area.							
2. Spa		sq. ft.	92.0%	0.00	n/a		
Enter total area of proposed spa.							
(2a) Exempt Spa:	0	sq. ft.	92.0%	0.00	n/a		
Calculated - 64 sq. ft. or Less Exempt							
(2b) Non-Exempt Spa:	0	sq. ft.	92.0%	0.00	50%	0.00	$0.00
Caculated - Total area of spa less the exempt area.							
3. Outdoor Pool		sq. ft.	92.0%	0.00	50%	0.00	$0.00
Enter total area of proposed pool.							
4. Heat Tape:		watts	100.0%	0.00	0%	0.00	$0.00
Enter watts of proposed electrical heat tape/trace/matt. Full wattage is currently exempt, enter total installed wattage in this cell.							
5. Outdoor Electric Heaters:		watts	100.0%	0.00	0%	0.00	$0.00
Enter watts of electricaly powered exterior heaters. Full wattage is currently exempt, enter total installed wattage in this cell.							
6. Outdoor Gas-Fired Heaters:		Btu/hr	n/a	0.00	0%	0.00	$0.00
Enter total BTUs of gas fired heaters. Full load is currently exempt.							
7. Outdoor Gas Fireplaces & Firepits:		Btu/hr	n/a	0.00	100%	0.00	$0.00
Enter total BTUs of gas fireplaces and firepits.							
				Exterior Energy REEOP Payment Total:		0.00	$0.00

Step 2: On-Site Renewable Credit Calculation Totals

- The total PV and payment in lieu offsets applied from on-site renewable energy credits from supplemental energy sources (heat pumps, solar hot water, on-site PV, and alternative energy sources) will be totaled into cells Q63 and R63 respectively.

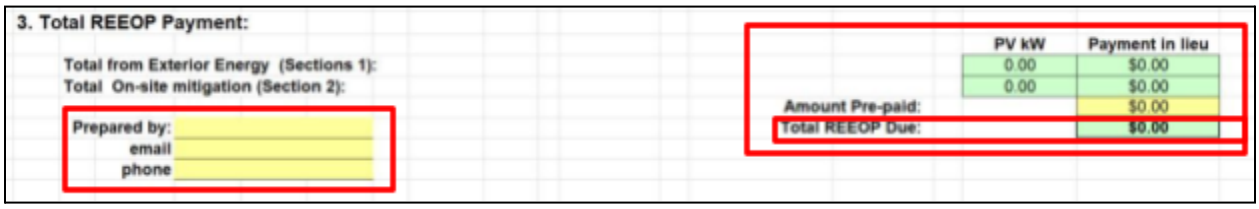


2. On-site Renewable Credits

Supplemental Energy Sources (options for on-site offset of projected energy consumption)			Offset Applied: equiv PV kW	Offset Applied: Credit applied
1.GSHP (Ground Source Heat Pump) *From GSHP Btu capacity on HP tab. Complete and submit that sheet.*	Btu	0	0.00	$0.00
2. ASHP (Air Source Heat Pump) *From ASHP Btu capacity on HP tab. Complete and submit that sheet.*	Btu	0	0.00	$0.00
3. SHW (Solar Hot Water) *Use installed panel area.*	sq. ft.	0	0.00	$0.00
4. PV (to be installed on site) *From PV Generation tab. Complete and submit that sheet.*	kW	0.00	0.00	$0.00
5. Alternative Renewable Energy Source *From Alt Energy Source tab. Complete and submit that sheet.*			0.00	$0.00
		Supplemental Energy Credit Total:	0.00	$0.00

Step 3: Total EEOP Payment

- The total PV and payment in lieu offset required (Section 1) will be automatically input into cells Q68 and R68, respectively.
- The total PV and payment in lieu credits applied from renewable sources (Section 2) will be automatically input into cells Q69 and R69, respectively.
- Input any pre-paid offset amount into cell R70.
- The total exterior energy offset payment required will be automatically summed in cell 71.
- Input the preparer's name, email, and phone number into cells E71, E72, E73 respectively.



3. Total REEOP Payment:

	PV kW	Payment in lieu
Total from Exterior Energy (Sections 1):	0.00	$0.00
Total On-site mitigation (Section 2):	0.00	$0.00
Amount Pre-paid:		$0.00
Total REEOP Due:		$0.00

Prepared by:
email
phone