



# Capital Cost Recovery Analysis

## Capital Cost Recovery Analysis

As interest in renewable energy grows, some cooperative members are considering the purchase of a small wind system. If you are interested in installing a small wind system to replace all or some of the electricity that your cooperative provides, talk with a cooperative representative about your plans.

Before you decide to buy a small wind system, however, you should consider the economics to determine whether such a system will lower your monthly electricity costs. This capital cost recovery analysis, prepared by the Association of Illinois Electric Cooperatives (AIEC),\* will enable you to determine the annual operating cost of a small wind system and compare that cost to the cost of the electricity that you purchase from your cooperative.

### INFORMATION REQUIRED FOR THE CAPITAL COST RECOVERY ANALYSIS

1. ENTER THE TOTAL COST OF PURCHASING AND INSTALLING THE GENERATING EQUIPMENT INCLUDING ANY INTERCONNECTION AND SYSTEM UPGRADE COSTS:	\$ _____
2. ENTER THE AMOUNT OF GRANTS, TAX CREDITS, OR OTHER FUNDING NOT REQUIRED TO BE REPAYED BY THE MEMBER FOR THE PURCHASE AND INSTALLATION OF THE GENERATING EQUIPMENT:	\$ _____
3. SUBTRACT LINE 2 FROM LINE 1 TO DETERMINE THE NET COST OF THE EQUIPMENT:	\$ _____
4. ENTER THE ESTIMATED AMOUNT OF ANNUAL MAINTENANCE COST OF THE GENERATING EQUIPMENT (INCLUDE ANY ANNUAL OPERATION COSTS, INCLUDING INSURANCE PREMIUMS IF ANY):	\$ _____

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Table I						
YEARS	7.5 %	6.5 %	5.5%	4.5 %	3.5 %	
	CAPITAL RECOVERY FACTOR	CAPITAL RECOVERY FACTOR	CAPITAL RECOVERY FACTOR	CAPITAL RECOVERY FACTOR	CAPITAL RECOVERY FACTOR	
1	1.0750	1.0650	1.0550	1.0450	1.0350	
3	0.3845	0.3776	0.3707	0.3638	0.3569	
5	0.2472	0.2406	0.2342	0.2278	0.2215	
10	0.1457	0.1391	0.1327	0.1264	0.1202	
15	0.1133	0.1064	0.0996	0.0931	0.0868	
20	0.0981	0.0908	0.0837	0.0769	0.0704	
25	0.0897	0.0820	0.0745	0.0674	0.0607	
30	0.0847	0.0766	0.0688	0.0614	0.0544	
35	0.0815	0.0713	0.0650	0.0573	0.0500	
40	0.0794	0.0707	0.0623	0.0543	0.0468	

5. ENTER FROM TABLE I EITHER: (A) THE INTEREST RATE OF BORROWED FUNDS TO PURCHASE THE GENERATING EQUIPMENT, OR (B) THE INTEREST RATE THAT WOULD BE RECEIVED ON THE MONEY USED TO PURCHASE THE GENERATING EQUIPMENT:

\_\_\_\_\_

(Pick the closest interest rate from the table)

6. ENTER FROM TABLE I THE NUMBER OF YEARS THE GENERATING EQUIPMENT CAN BE EXPECTED TO OPERATE OR THE NUMBER OF YEARS FOR THE LOAN:

\_\_\_\_\_

(Pick the closest number of years from the table)

7. ENTER THE CAPITAL COST RECOVERY FACTOR FROM TABLE I ABOVE:

\$ \_\_\_\_\_

(Locate the interest rate in the top row of table I that you entered on line 5. Proceed down that column to the number of years corresponding to the entry on line 6. Enter the capital recovery factor indicated in that box on line 7.)

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8. ENTER THE ESTIMATED PERCENT OF TIME THE GENERATING EQUIPMENT WILL OPERATE (ENTER AS A WHOLE NUMBER):	_____ %
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(A wind turbine may operate 25% to 40% of the time depending upon your geographic location. But you should confirm by independent analysis the percent your specific generating equipment is likely to operate.)

9. MULTIPLY (8) $\times$ 8760/100 = THE NUMBER OF HOURS PER YEAR OF OPERATION	_____
10. ENTER THE RATED CAPACITY OF THE GENERATING EQUIPMENT IN KILOWATT (KW)	_____ kW
11. MULTIPLY (9) $\times$ (10) = KILOWATT-HOUR (KWH) PER YEAR (GENERATED)	_____
12. ENTER YOUR COOPERATIVE'S AVERAGE COST PER KILOWATT-HOUR FOR THE ENERGY YOU PURCHASED DURING THE LAST 12 MONTHS (\$/KWH):	\$ _____/kWh

(Excluding any monthly facility charge or consumer charge.)

## CALCULATION OF ANNUAL OPERATING COST OF EQUIPMENT

The total annual operating cost (TOC) of equipment is calculated by:

13. MULTIPLY THE NET COST OF THE GENERATING EQUIPMENT (LINE 3) BY THE CAPITAL RECOVERY FACTOR FROM LINE 7	\$ _____
14. TAKE (13) AND ADD THE ANNUAL MAINTENANCE COST OF THE EQUIPMENT (LINE 4):	\$ _____
15. TO DETERMINE THE TOC OF THE EQUIPMENT, ADD LINES 12 AND 14:	\$ _____
16. DIVIDE LINE 15, THE TOC OF THE EQUIPMENT, BY LINE 11, THE KILOWATT-HOURS TO BE GENERATED EACH YEAR:	\$ _____/kWh

(Line 16 is the TOC for the generating equipment per kilowatt-hour.)

17. COOPERATIVE AVERAGE COST PER KILOWATT-HOUR FROM LINE 12:	\$ _____/kWh
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\* Calculation form developed by Carl Dufner, vice president of engineering for the AIEC. To order brochure copies of the original AIEC form contact Angie Bingenheimer at the AIEC, 217-529-5561, [abingenheimer@aiec.coop](mailto:abingenheimer@aiec.coop).

(Note: This calculation form does not factor in any net excess generation payments. It compares the cost of electricity—in kilowatt-hours—from a member-owned generator to the cost of electricity from the cooperative.)