WIND STUDY | Wind Study is intended for grades 5-8 and 8-11
Questions posted on: Monday   Answers posted on: Friday
Find downloadable one pagers at www.onepower.com/one-power-feed

2024A11   TIME VALUE OF MONEY

Level 1:

To find how much money the customer owes, we can simply multiply the amount of energy with total energy production.

$$16,015,000 \text{ Kwh} \times 0.0476 \text{ \$/kWh} = \$762,314$$

To determine how much the payment is worth at the beginning of the year, we use the PV formula.

$$PV = \frac{FV}{(1+r)^n}$$

Where:

FV = $762,314 (Payment at the end of the year)

R = 5.2% = 0.052 (interest rate for the year)

n = 1 (time in years)

$$PV = \frac{762,314}{(1+0.052)^1}$$

$$PV = \$724,633$$

A future payment of $762,314 one year from now is worth $724,633 today, given an interest rate of 5.20%.

Level 2:

The first step is to convert the Present Value of funding $3,200,000 to the future value using *Equation 2*.

$$FV = PV \times (1+r)^n$$
$$FV = \$3,200,000 \times (1+0.048)^3$$
$$FV = \$3,683,272.29$$

Now that both values are Future Value at the same time, we can divide them to find the percent secured.

$$Percent\ Secured = \frac{FV\ Secured}{FV\ Needed}$$
$$Percent\ Secured = \frac{\$3,683,272.29}{\$6,430,000.00}$$
$$Percent\ Secured = 57.28\%$$

Since we know how much we will have, we can use that to find how much we will need to meet the $6,430,000 goal.

$$Future\ Funding = FV\ Needed - FV\ Secured$$
$$Future\ Funding = \$6,430,000 - \$3,683,272.29$$
$$Future\ Funding = \$2,746,727.71$$