

**Question 28: (translated from French)**

We received the results of our exploratory study, which contains a connection cost in 2009 dollars. To properly interpret the results in terms of our project's competitiveness, we would like to obtain the kilowatt-hour (kWh) cost similarly to what was stated when the successful bidders for the 2000-MW call for tenders were announced (for instance, as provided on page 30 of exhibit HQD-2, document 1 submitted to the Régie).

**Answer 28:**

The following example will help clarify the evaluation method used for including the transmission costs in establishing the price. For purposes of the example, a 2000-MW project will be considered with a load factor of 35%, a transmission loss rate of 4% and a voltage level of 25 kV.

The transmission-related investments for the project are assumed to be \$2.2 million for the collector system, \$2 million for the transforming substation, \$5 million for integration into the system and \$5 million for system reinforcement. The costs associated with equipment operation and maintenance represent 15% of investments.

We will be using the following financial parameters in the calculation of the annuity and discount rate:

- Annual inflation rate of 2%;
- HQ-Distribution (HQD) discount rate of 5.687%;
- HQ-TransÉnergie (HQT) discount rate of 5.781%;
- Lifespan of transmission equipment of 40 years;
- Contract term of 20 years.

The transmission costs are taken into account in the establishment of the price through a three step process.

HQD notes that all of the data and parameters in the example are fictitious and are only used to demonstrate the method being used.

**Step 1: Determining the assumed costs**

The first step of the evaluation consists in determining the project costs that are assumed by HQT and HQD. The table that follows presents the project costs and the portions assumed by HQT and HQD.

Project costs (in 2010 M\$)	TOTAL			ASSUMED BY HQ-TRANSÉNERGIE		ASSUMED BY HQ-DISTRIBUTION		ASSUMED BY DEVELOPER	
	Investments	Operation (15% des invest.)	Total	Total	Comments	Total	Comments	Total	Comments
Collector system	2,0	0,3	2,3	2,3	Max of 185\$/kW	0,0	No cost	0,0	Balance
Transforming substation	2,2	0,3	2,5	0,9	Max of 47\$/kW	0,0	No cost	1,6	Balance
Intégration into the system	5,0	0,8	5,8	4,6	Investments only	0,8	Operation only	0,4	Balance
System reinforcement	5,0	0,8	5,8	4,6	Investments only	0,8	Operation only	0,4	Balance
<b>Total</b>	<b>14,2</b>	<b>2,1</b>	<b>16,3</b>	<b>12,4</b>	Max of 62\$/kW	<b>1,5</b>		<b>2,4</b>	

Step 2: Determining the annuity

The second step consists in transforming the costs assumed by HQT and HQD into a constant annuity. The portion of the costs assumed by the transmission provider is transformed into a constant annuity while considering HQT's nominal discount rate, the annual inflation rate, and the lifespan of the transmission equipment. The portion of the costs assumed by HQD is transformed into a constant annuity while considering the HQD's nominal discount rate, the annual inflation rate, and the term of the contract. HQD uses Excel's PMT financial function to calculate the annuity.

The following table presents the annuity expressed in 2010 dollars. The total annuity is \$708K, of which \$601K is assumed by HQT.

<b>Calculation of annuity (in 2010 k\$)</b>	
Portion assumed by HQ-Distribution	107
Portion assumed by HQ-TransÉnergie	601
<b>Total</b>	<b>708</b>

Step 3: Discounting in discounted \$/MWh

The annuity is transformed into discounted dollars per megawatt-hour (discounted \$/MWh) while taking into account the wind farm's annual generation of power, given the transmission-related energy losses. The transmission costs, expressed in the form of an annuity, are spread out over the contract term and indexed based on the forecast inflation rate (2% in the example). The transmission costs and the annual energy, minus the losses, are discounted to the year 2010 (reference year) while taking into account HQD's discount rate. HQD uses Excel's NPV financial function to determine the discount value.

The transmission costs are expressed in the form of "discounted \$/MWh" by dividing the net present value (NPV) of the costs by the net present value (NPV) of the energy minus the losses. In the example, the transmission cost is 11.79 "discounted \$/MWh".

Note:

HQD will not be answering any questions related to the above example. If needed, those interested are asked to consult their experts in the field.