



Bioenergy Call – Phase 1

Sample Calculations for Energy and LD Payments

Power Acquisitions

Calculation of Firm Energy Price

Example:

Calculate firm energy price for January peak hours in 2012

Assumptions

- Contractual firm energy price = \$75/MWh (Jan 1, 2008 \$)
- COD = Jan 1, 2011
- Pre-COD escalation percentage = 200%
- Post-COD escalation percentage = 50%
- Annual escalation rate = 2% per annum
- Delivery Time Factor (January peak hours) = 122%

❖ Pre-COD escalation = $200\% \times (1.02^3 - 1) = 0.1224$

❖ Post-COD escalation = $50\% \times (1.02 - 1) = 0.0100$

❖ Escalated price (Jan 2012) = $\$75/\text{MWh} \times (1+0.1224) \times (1+0.0100) = \$85.02/\text{MWh}$

❖ Adjusted escalated price = $\$85.02/\text{MWh} \times 122\% = \$103.73/\text{MWh}$

Non-Firm Energy Price - Option A

Example:

Calculate the adjusted escalated non-firm energy price for the Peak Hours in January 2012.

- ❖ Fixed non-firm energy price for 2012 = \$44.6/MWh
- ❖ Annual escalation = 2% per annum
- ❖ Delivery time factor (Jan peak hours) = 122%
- ❖ Transmission losses = 5%

Adjusted escalated non-firm energy price = \$44.6/MWh x (1.02)⁴ x 122% x (1 – 5%) = \$55.95/MWh

Non-Firm Energy Price - Option B

Example:

Calculate the adjusted non-firm energy price for the Super-Peak Hours in March 2010.

- ❖ Average of the daily Mid-C non-firm price index during the on-peak hours for March 2010 = \$45/MWh
- ❖ Transmission Losses = 5%
- ❖ Delivery time factors
 - March Peak Hours = 112%
 - March Super-Peak Hours = 124%
- ❖ Delivery time factor for March on-peak hours = $(12 \times 112\% + 4 \times 124\%) / 16 = 115\%$
- ❖ March super-peak price = $124\% / 115\% \times \$45/\text{MWh} = \$48.52/\text{MWh}$

Adjusted non-firm energy price under pricing option B = $\$48.52/\text{MWh} \times (1 - 5\%) = \$46.10/\text{MWh}$

Calculation of LD Payment

Example:

Calculate LD Payment for firm energy delivery shortfall from 2:00 a.m. to 6:00 a.m. on March 1, 2008

Assumptions

- ❖ Contracted hourly firm energy (March non-peak hours) = 50 MWh/h
- ❖ Delivered eligible energy = 180 MWh
- ❖ Daily Mid-C firm price for non-peak hours = \$80/MWh
- ❖ Contract firm energy price = \$75/MWh
- ❖ Time of delivery factor (March non-peak hours) = 99%
- ❖ Losses = 5%
- ❖ Hourly firm adjustment (March non-peak hours) = \$0/MWh

Calculation of LD Payment (cont'd)

LD payment = LD factor x (hourly firm energy amount – delivered eligible energy)

where:

LD factor = greater of: (i) Mid-C firm price index for the applicable daily period – (firm energy price x time of delivery factor / (1 – losses) + hourly firm adjustment) and (ii) \$5.00/MWh

LD factor = greater of:

- 1) $\$80/\text{MWh} - (\$75/\text{MWh} \times 99\% / (1-5\%) - \$0/\text{MWh}) = \$1.84/\text{MWh}$
- 2) $\$5.00/\text{MWh}$

LD payment = $\$5.00/\text{MWh} \times (50 \text{ MWh/h} \times 4 \text{ hours} - 180 \text{ MWh}) = \100.00