No-Load Cost

CDS Meeting

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No-Load Calculation Example

- **This method uses a generator's derived heat input curve to determine offers**

- **This method shows altered no-load costs depending on the MW value of the generator's economic minimum.**

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No-Load Inputs

- **Determine heat input based on heat input data:**

Net Gen MW	Heat Input MMBtu/Hr
0	238.23
50	774.58
160	1,957.15
310	3,575.53
410	4,658.16
525	5,906.85
550	6,178.82

- **Trendline equation for heat input data:**

$y = 0.00014831x^2 + 10.71915x + 238.232$

- **No-load heat input: 238.2 MMBtu/hr**

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Determine Offers

- **Use equation to determine cost at economic minimum. First derivative of heat input curve represents rate of change of generator output, or incremental offer curve.**

- **Inputs:**

Fuel Cost	$4.00
VOM	$0.15
Performance Factor	1.02

- **Determine offers using first derivative and costs: (2*.00014831*MW+10.71915)*((4.00+0.15)*1.02)**

MW	Offer
50	$45.44
160	$45.58
310	$45.76
410	$45.89
525	$46.03
550	$46.07

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Determine no-loads

- **Total cost of running at economic minimum:**
- **774.58 Mbtu * (($4.00+$0.15)*1.02) = $3,278.79**

- **Incremental cost of running at economic minimum:**
- **$45.44*50 = $2,271.92**

- **Determine no-load offer (Total Cost – Incremental Cost = No-load offer)**
- **$3,278.79 – $2,271.92 = $1,006.87 per hour**

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Intercept Point No-Load vs. No-Load

- **No-load calculated based on intercept point:**
- **238.32 MMBtu * (($4.00+$0.15)*1.02) = $1,008.44 per hour**

- **No-load offer (Total Cost – Incremental Cost = No-load offer):**
- **$3,278.79 – $2,271.92 = $1,006.87 per hour**

Changing Economic Minimums

- **Higher economic minimums indicate unit is running at more efficient points.**

- **Lower economic minimum results in higher no-load costs**

- **Higher economic minimum (in MW) results in lower no-load costs.**

  - **Example: 310 MW economic minimum:**
  - **$948.10 per hour no-load cost.**
  - **Example: 525 MW economic minimum:**
  - **$835.39 per hour no-load cost.**

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