

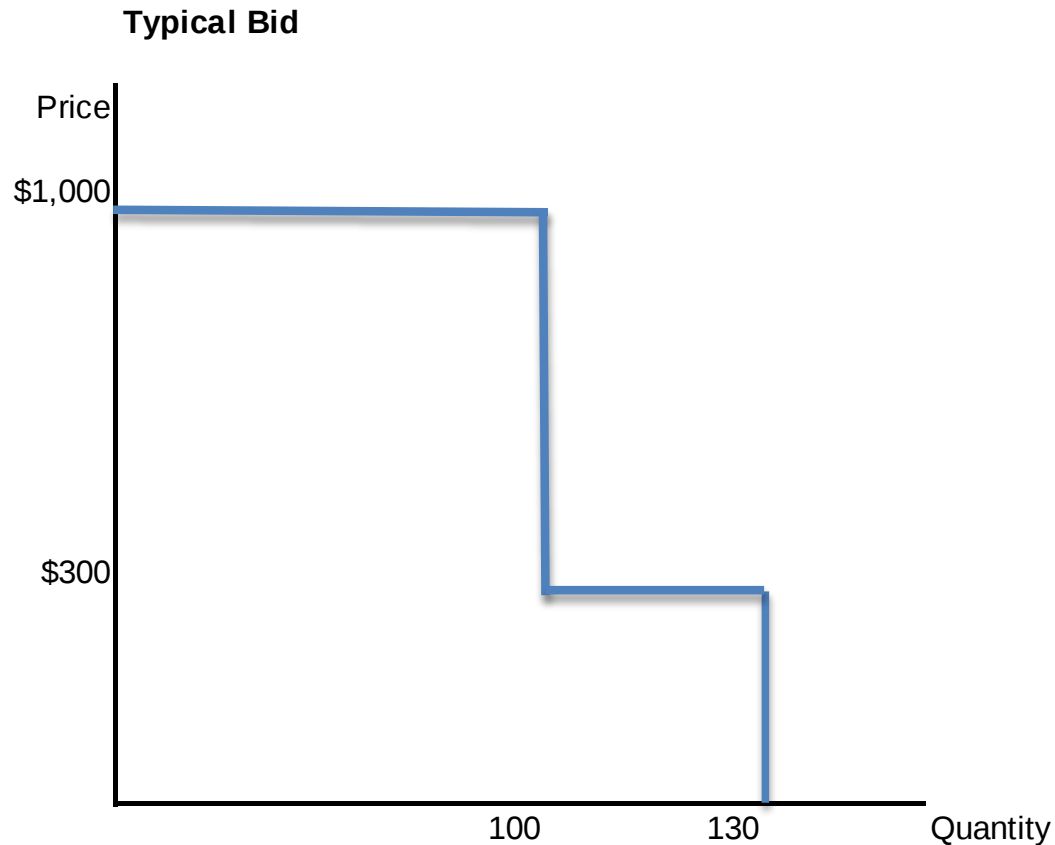
Dispatchable Demand

Constrained-on/constrained-off scenarios

Briefing

26 August 2013

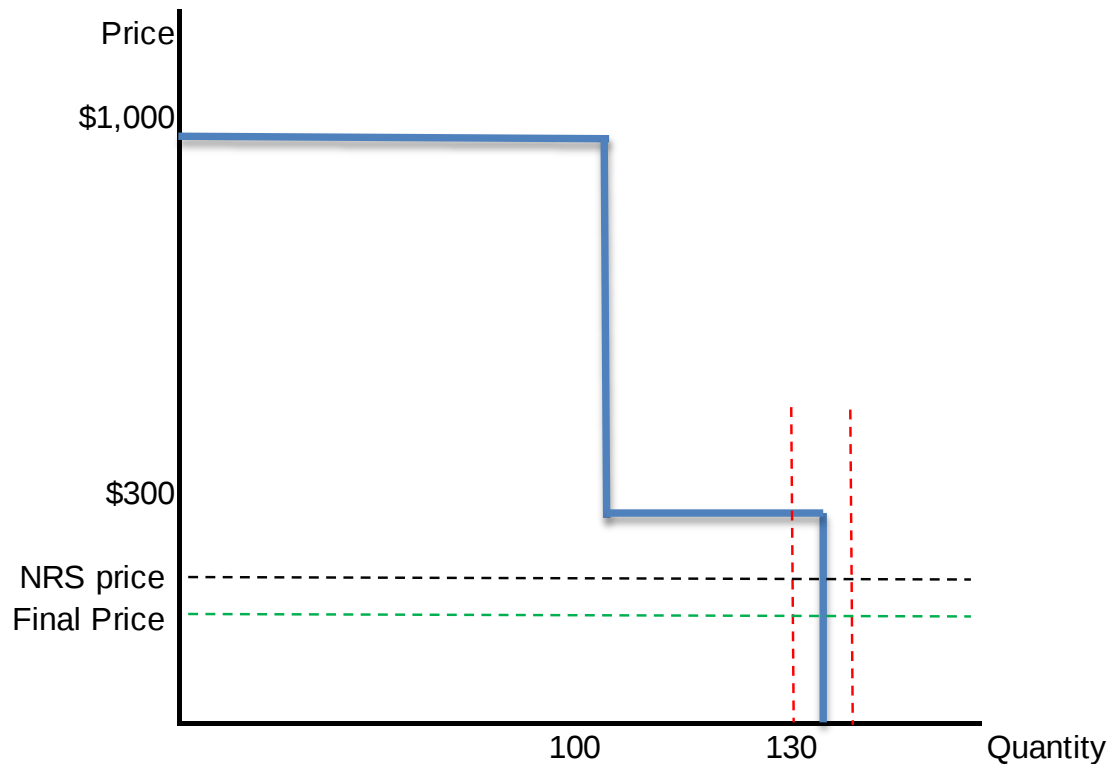
Worked examples of constrained-off and constrained-on



Band 1: bid to purchase 100MW if price below \$1000

Band 2: bid to purchase an additional 30MW if price is below \$300

Scenario 1: NRS price < band 2 bid price, Final price < band 2 bid price



Dispatch quantity = 130MW

Scheduled quantity in final pricing = 130MW

Con-on based on minimum of dispatched quantity and actual quantity

Con-off based on maximum of dispatched quantity and actual quantity

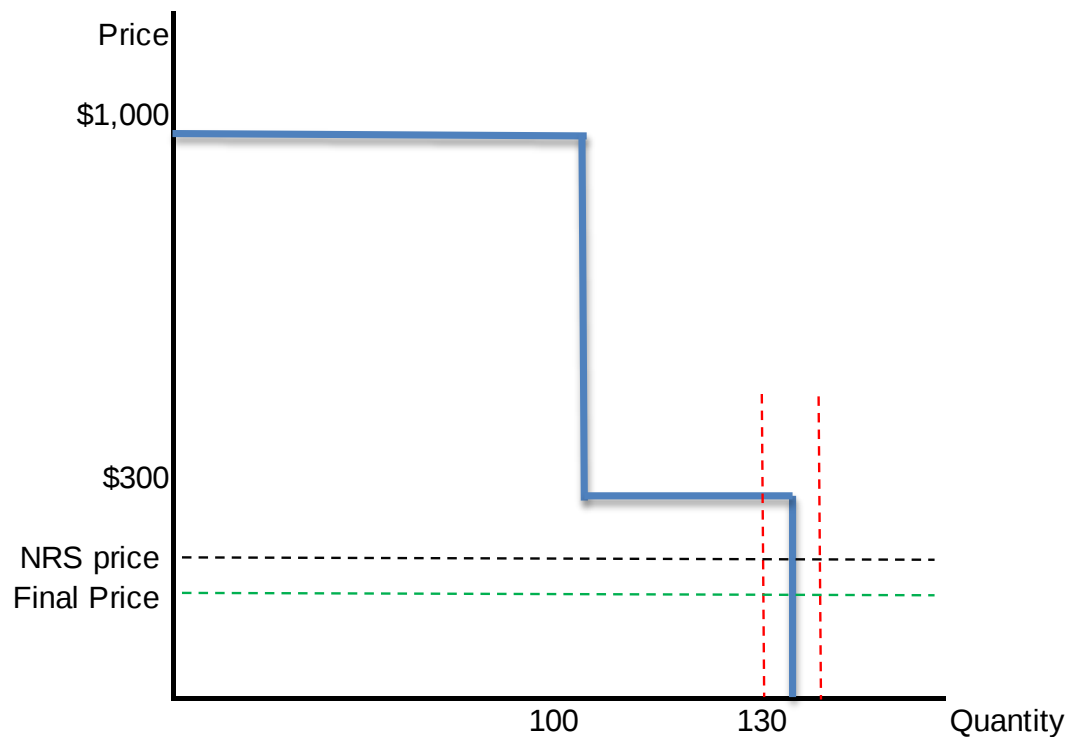
Actual quantity = 130MW. No Con-off, no Con-on

Actual quantity = 128MW. No Con-off

Actual quantity = 132MW. No Con-on

No
constrained
payments

Scenario 1: NRS price < band 2 bid price, Final price < band 2 bid price



Dispatch quantity = 130MW

Scheduled quantity in final pricing = 130MW

Con-on based on minimum of dispatched quantity and actual quantity

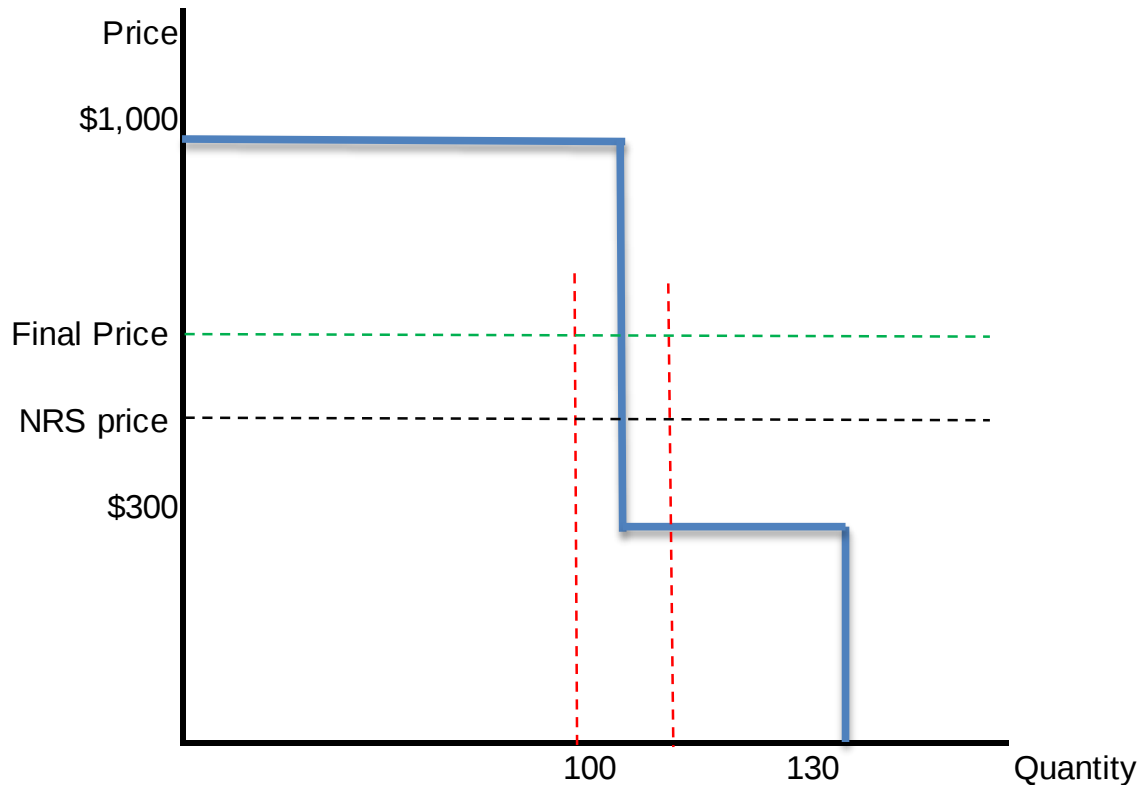
Con-off based on maximum of dispatched quantity and actual quantity

Actual quantity = 130MW. No Con-off, no Con-on

Actual quantity = 128MW. No Con-off

Actual quantity = 132MW. No Con-on

Scenario 2: NRS price > band 2 bid price, Final price > band 2 bid price



Dispatch quantity = 100MW

Scheduled quantity in final pricing = 100MW

Con-on based on minimum of dispatched quantity and actual quantity

Con-off based on maximum of dispatched quantity and actual quantity

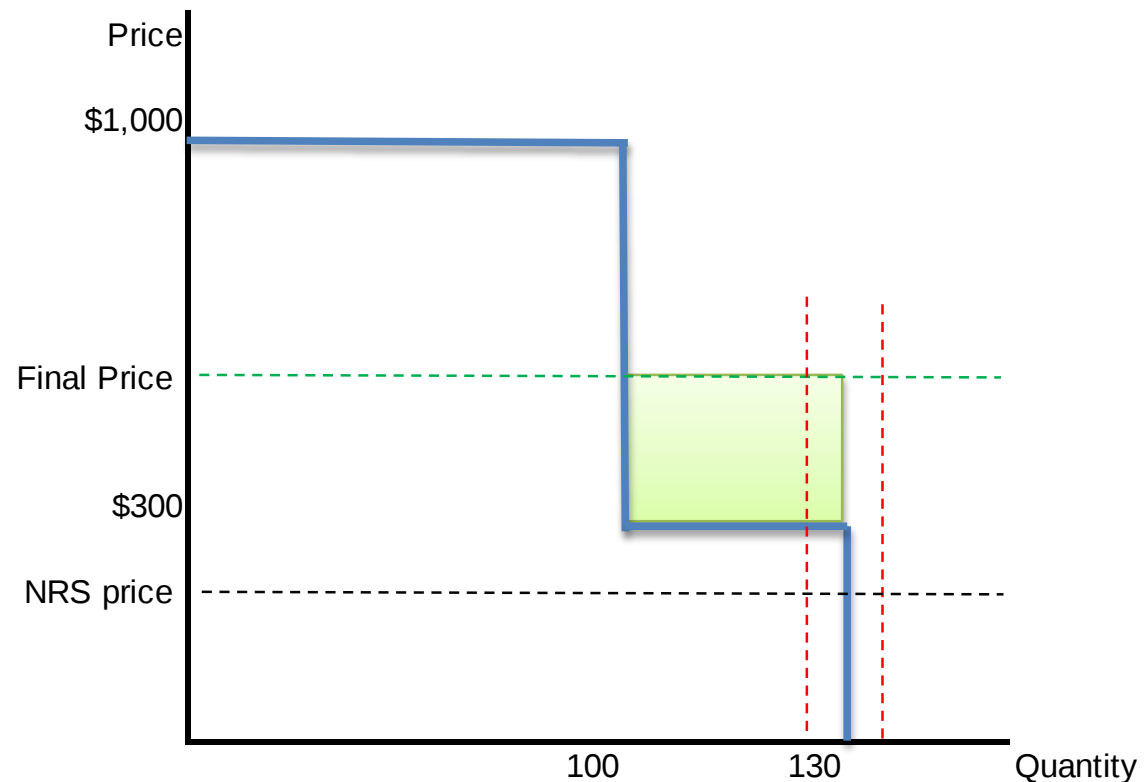
Actual quantity = 100MW. No Con-off, no Con-on

Actual quantity = 98MW. No Con-off

Actual quantity = 102MW. No Con-on

Scenario 3: NRS price < band 2 bid price, Final price > band 2 bid price

**Constrained-
on payment**



Dispatch quantity = 130MW

Scheduled quantity in final pricing = 100MW

Con-on based on minimum of dispatched quantity and actual quantity

3A: Actual quantity = 130MW. Con-on based on 130MW

3B: Actual quantity = 132MW. Con-on based on 130MW

Clause 13.204(1)(aa)

$$\text{ConOnAmt} = \text{ConOnQ} * (P_f - P_b)$$

$$\text{ConOnQ} = \min(\text{Qdisp}, \text{Qrec}) - \text{Qfp}$$

Scenario 3A: Qdisp = 130 Implies NRS price < \$300

$$\text{Qfp} = 100$$

$$\text{Qrec} = 130$$

$$\text{Pb} = \$300$$

$$\text{Pf} = \$350$$

$$\text{ConOnQ} = \min(130, 130) - 100$$

$$= 30$$

$$\text{ConOnAmt} = 30 * (350 - 300)$$

$$\$1,500$$

Clause 13.204(1)(aa)

$$\text{ConOnAmt} = \text{ConOnQ} * (P_f - P_b)$$

$$\text{ConOnQ} = \min(\text{Qdisp}, \text{Qrec}) - \text{Qfp}$$

Scenario 3B: $\text{Qdisp} = 130$ Implies NRS price < \$300

$$\text{Qfp} = 100$$

$$\text{Qrec} = 132$$

$$P_b = \$300$$

$$P_f = \$350$$

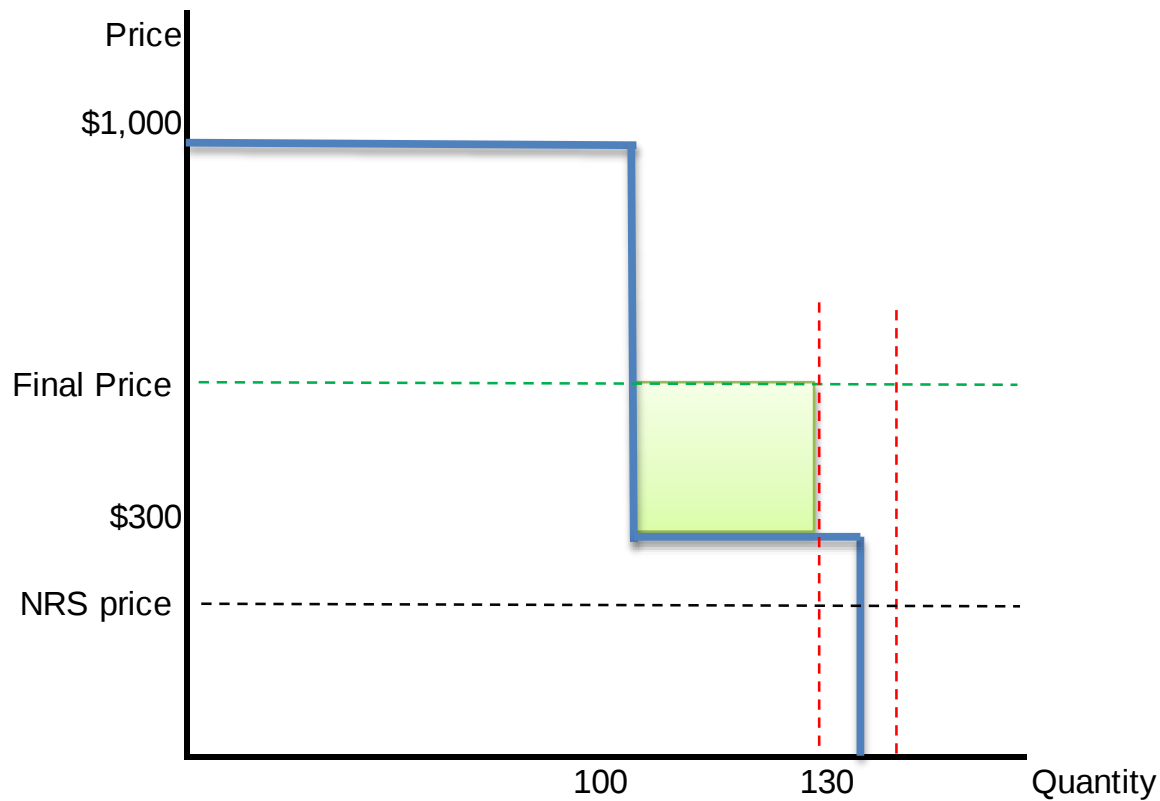
$$\text{ConOnQ} = \min(130, 132) - 100$$

$$= 30$$

$$\text{ConOnAmt} = 30 * (350 - 300)$$

$$\$1,500$$

Scenario 3: NRS price < band 2 bid price, Final price > band 2 bid price



Dispatch quantity = 130MW

Scheduled quantity in final pricing = 100MW

Con-on based on minimum of dispatched quantity and actual quantity

Actual quantity = 130MW. Con-on based on 130MW

3C: Actual quantity = 128MW. Con-on based on 128MW

Clause 13.204(1)(aa)

$$\text{ConOnAmt} = \text{ConOnQ} * (P_f - P_b)$$

$$\text{ConOnQ} = \min(\text{Qdisp}, \text{Qrec}) - \text{Qfp}$$

Scenario 3C: $\text{Qdisp} = 130$ Implies NRS price < \$300

$$\text{Qfp} = 100$$

$$\text{Qrec} = 128$$

$$P_b = \$300$$

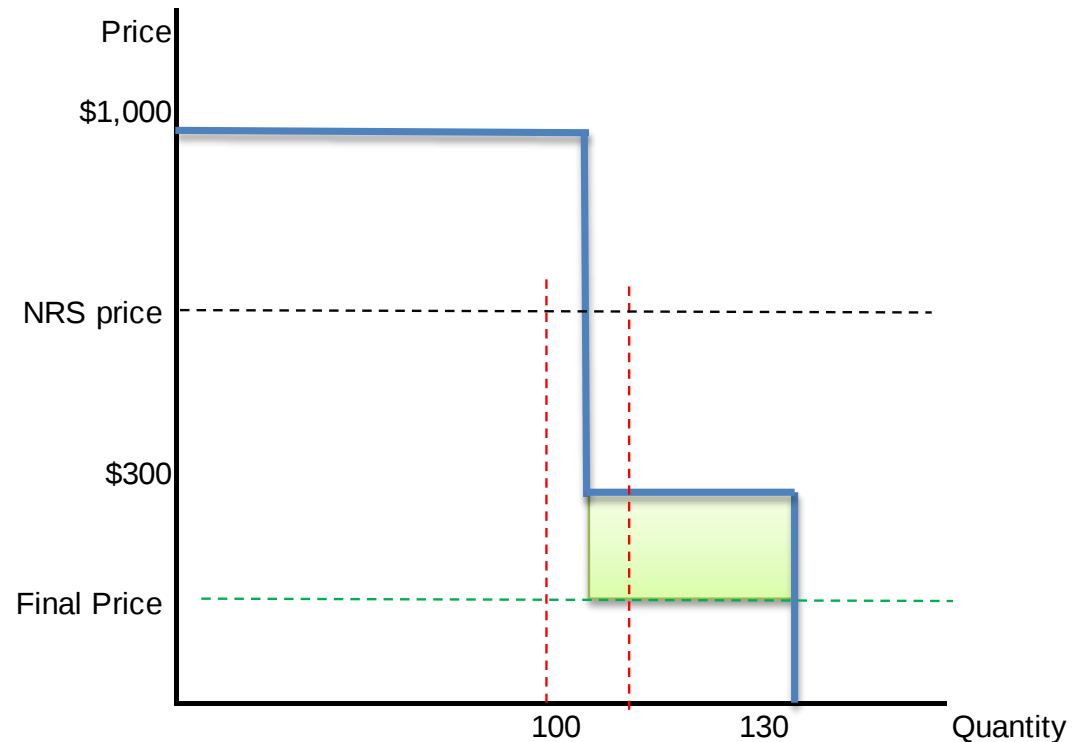
$$P_f = \$350$$

$$\begin{aligned} \text{ConOnQ} &= \min(130, 128) - 100 \\ &= 28 \end{aligned}$$

$$\begin{aligned} \text{ConOnAmt} &= 28 * (350 - 300) \\ &= \$1,400 \end{aligned}$$

Constrained -off payment

Scenario 4: NRS price > band 2 bid price, Final price < band 2 bid price



Dispatch quantity = 100MW

Scheduled quantity in final pricing = 130MW

Con-off based on maximum of dispatched quantity and actual quantity

4A: Actual quantity = 100MW. Con-off based on 100MW

4C: Actual quantity = 98MW. Con-off based on 100MW

Clause 13.194(1A)

$$\text{ConOffAmt}_{\text{disp}} = \text{ConOffQ} * (P_b - P_f)$$

$$\text{ConOffQ} = Q_{fp} - \max(Q_{\text{disp}}, Q_{\text{rec}})$$

Scenario 4A: $Q_{\text{disp}} = 100$ Implies NRS price > \$300

$$Q_{fp} = 130$$

$$Q_{\text{rec}} = 100$$

$$P_b = \$300$$

$$P_f = \$200$$

$$\text{ConOffQ} = 130 - \max(100, 100)$$

$$= 30$$

$$\text{ConOffAmt}_{\text{disp}} = 30 * (300 - 200)$$

$$\$3,000$$

Clause 13.194(1A)

$$\text{ConOffAmt}_{\text{disp}} = \text{ConOffQ} * (P_b - P_f)$$

$$\text{ConOffQ} = Q_{fp} - \max(Q_{\text{disp}}, Q_{\text{rec}})$$

Scenario 4C: $Q_{\text{disp}} = 100$ Implies NRS price > \$300

$$Q_{fp} = 130$$

$$Q_{\text{rec}} = 98$$

$$P_b = \$300$$

$$P_f = \$200$$

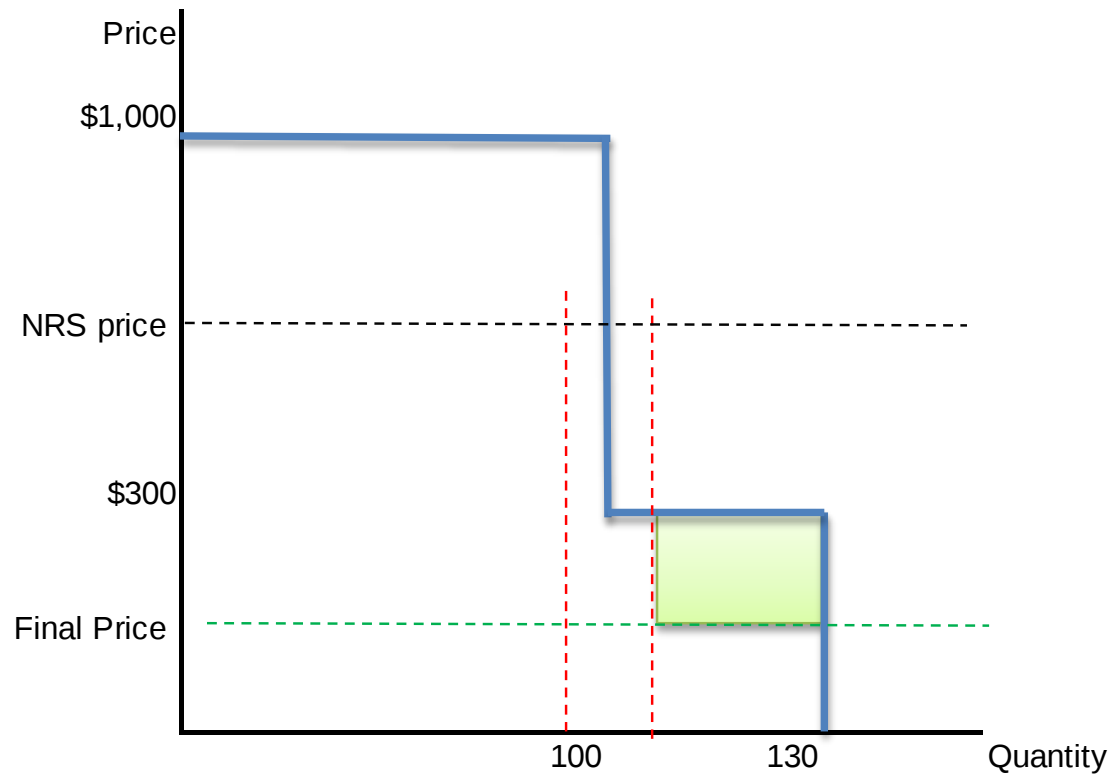
$$\text{ConOffQ} = 130 - \max(100, 98)$$

$$= 30$$

$$\text{ConOffAmt}_{\text{disp}} = 30 * (300 - 200)$$

$$\$3,000$$

Scenario 4: NRS price > band 2 bid price, Final price < band 2 bid price



Dispatch quantity = 100MW

Scheduled quantity in final pricing = 130MW

Con-off based on maximum of dispatched quantity and actual quantity

Actual quantity = 100MW. Con-off based on 100MW

4B: Actual quantity = 102MW. Con-off based on 102MW

Clause 13.194(1A)

$$\text{ConOffAmt}_{\text{disp}} = \text{ConOffQ} * (P_b - P_f)$$

$$\text{ConOffQ} = Q_{fp} - \max(Q_{\text{disp}}, Q_{\text{rec}})$$

Scenario 4B: $Q_{\text{disp}} = 100$ Implies NRS price > \$300

$$Q_{fp} = 130$$

$$Q_{\text{rec}} = 102$$

$$P_b = \$300$$

$$P_f = \$200$$

$$\text{ConOffQ} = 130 - \max(100, 102)$$

$$= 28$$

$$\text{ConOffAmt}_{\text{disp}} = 28 * (300 - 200)$$

$$\$2,800$$