Energy charges (utility)

0-200 units	201-400 units	401-800 unit	801-1200 unit	>1200 unit
3 Rs/kwh	4.5 Rs/kwh	6.5 Rs/kwh	7 Rs/kwh	8 Rs/kwh

50% → 116.67% = 700/6 % → 133.33% = 400/3 → 166.67 = 500/3 %

[buying price = 1.5 Rs/kwh]

Note :— + Supply
− demand.

For D > A

	Available/D	Price
H_1	+200	2.7
H_2	−400	
H_3	−600	
H_4	−200	
H_5	−600	
H_6	+1000	2
H_7	−900	
H_8	+500	2.5
H_9	+100	2.3
H_{10}	−300	

Available supply = +1800

Demand = −3000

Utility sell → starts from 3 Rs/kwh

buys → 1.5 Rs/kwh

Sorting supply

H_1	+200	2.7
H_6	+1000	2
H_8	+500	2.5
H_9	+100	2.3

buyer

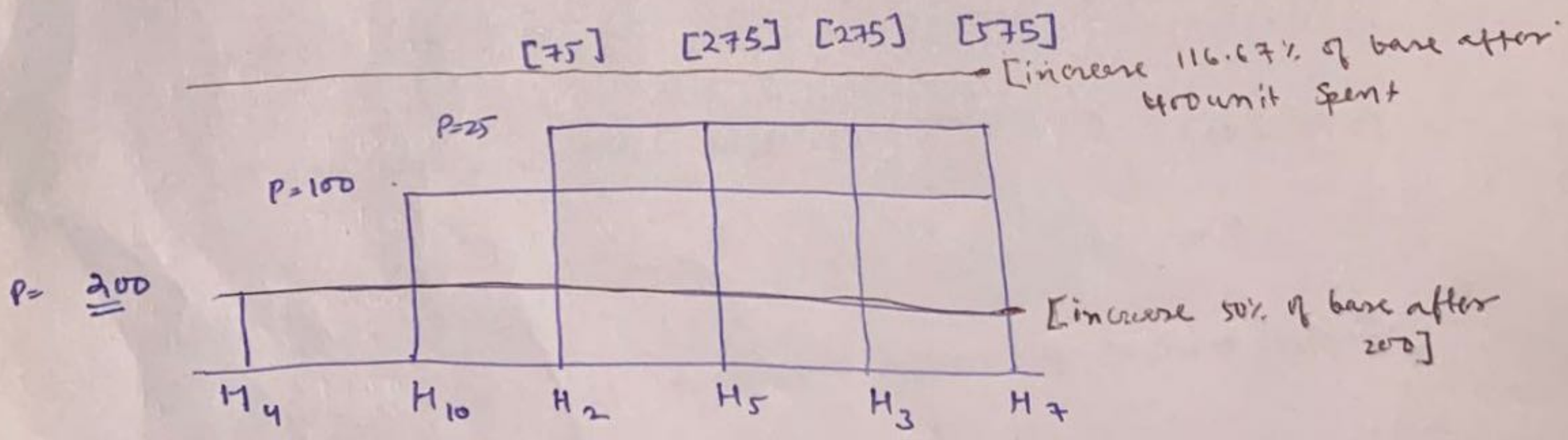
H_2	-400
H_3	-600
H_4	-200
H_5	-600
H_7	-900
H_{10}	-300

H_6	+1000	2
H_9	+100	2.3
H_8	+500	2.5
H_1	+200	2.7
	+1800	9.5

Price ↓ Priority ↑

H_4	-200
H_{10}	-300
H_2	-400
H_5	-600
H_3	-600
H_7	-900
	-3000

demand ↓



200 300 400 600 600 900

Stage-1

$P_{avg} = \frac{1800}{6} = 300$

All takes 200 unit of electricity so 600 unit left

Stage 2

$P_{avg} = \frac{600}{5} = 120$ unit

All take 100 unit of electricity so 100 unit left

Stage-3

$P_{avg} = \frac{100}{4} = 25$ unit

All take 25 unit of electricity

Note :- Base price mentioned earlier is Price set by the seller and the increase is based on the utility framework of Delhi.

$$\text{Price avg} = \frac{1000\times2 + 100\times2.3 + 500\times2.5 + 200\times2.7}{1800}$$

Price avg = 2.233 Rs/unit

Price paid by the buyer is :-

$H_4 = 2.233$ Rs/unit $\Rightarrow$ $2.233 \times 200 \times 1 = 446.6$ Rs

$H_{10} = 2.233\times1\times200 + 2.233\times1.5\times100 = 781.55$ Rs

$H_2 = 2.233 \times 1 \times 200 + 2.233 \times 1.5 \times 100 + 2.233 \times 75 \times 2.1667 = 1144.41$ Rs

$H_5 = 1144.41$ Rs

$H_3 = 1144.41$ Rs

$H_7 = 1144.41$ Rs

Total price = $446.6 + 781.55 + 1144.41 \times 4 = 5805.79$ Rs

Coated price = 4019.4

Extra price due to high uses because of certain costumer

$5805.79 - 4019.4 = 1786.39$

Extra avg = $\frac{1786.39}{1800} = 0.9924$ Re/unit

	unit	Price	
H_6	+1000	2	$2\times1000 + 0.9924\times1000 = 2992.4$ Rs
H_9	+100	2.3	$(2.3+0.9924)\times100 = 329.24$ Rs
H_8	+500	2.5	$(2.5+0.9924)\times500 = 1746.2$ Rs
H_1	+200	2.7	$(2.7+0.9924)\times200 = 738.48$ Rs
	+1800	9.5	5806.32 Rs

if cosumer had to buy directly from utility then.

H_4 -200 $\Rightarrow$ 200×3

H_{10} -300 $\Rightarrow$ $200\times3 + 100\times4.5$

H_2 -400 $\Rightarrow$ $200\times3 + 125\times4.5$

H_3 -600 $\Rightarrow$ $200\times3 + 125\times4.5 + 200\times6.5$

H_5 -600 $\Rightarrow$ 11

H_7 -900 $\Rightarrow$ $200\times3+200$

if costumer had to buy directly from utility then

H_4 -200 $\Rightarrow$ 200×3 = 600

H_{10} = -300 $\Rightarrow$ $200\times3+100\times4.5$ = 1050

H_2 -400 $\Rightarrow$ $200\times3+125\times4.5$ = 1162.5

H_3 -600 $\Rightarrow$ $200\times3+125\times4.5$ = 1162.5

H_5 -600 $\Rightarrow$ $200\times3+125\times4.5$ = 1162.5

H_7 -900 $\Rightarrow$ $200\times3+125\times4.5$ = 1162.5

6300 Rs

As we can see that there is almost 493 Rs difference bet^n utility and locality.

For A > D

	unit	Price
H_1	+1200	2.7
H_2	-400	
H_3	-500	
H_4	-100	
H_5	-600	
H_6	+1400	2
H_7	-900	
H_8	+700	2.5
H_9	+200	2.3
H_{10}	-300	

Available supply = 3500 unit

Demand = 2800 unit

Sorting Supplyer

H_1	+1200	2.7
H_6	+1400	2
H_8	+700	2.5
H_9	+200	2.3

buyer

H_2	-400
H_3	-500
H_4	-100
H_5	-600
H_7	-900
H_{10}	-300

H_6	+ 1400	2	
H_9	+ 200	2.3	Price ↓
H_8	+ 700	2.5	
H_1	+ 1200	2.7	
	3500		Priority ↑

H_4	-100
H_{10}	-300
H_2	-400
H_3	-500
H_5	-600
H_7	-900
	-2800

Since Demand is ~~2800~~ 2800 so we need 2800 from the supplier

i.e H_6 (1400) + H_9 (200) + H_8 (700) + H_1 (500)

[Note:- Here H_1 have to sell its extra 700 unit to utility at the price of 1.5 Rs/unit.

Stage 1

$P_{avg} = \frac{2800}{6} = 466.67$

Stage-2

$P_{avg} = \frac{2200}{5} = 440$

Stage-3

$P_{avg} = \frac{1200}{4} = 300$

we will give only 100 unit to all
So 2200 unit left

we will give 200 to all
1200 left

we will give 100 to each
800 left

Stage 4

$P_{avg} = \frac{800}{3} = 266.67$

we will give only 100 unit so
500 unit left

Stage-5

$P_{avg} = \frac{500}{2} = 250$

we will give 100 unit
so 300 unit left

Stage 6

$P_{avg} = 300$ unit

$$\text{Price avg} = \frac{1400\times2 + 200\times2.3 + 700\times2.5 + 500\times2.7}{2800} = 2.2714 \text{ Rs/unit}$$

$H_4 = 100 \times 2.2714 = 227.14$ Rs

$H_{10} = 200 \times 2.2714 + 100 \times 1.5 \times 2.2714 = 794.99$ Rs

$H_2 = 200 \times 2.2714 + 200 \times 1.5 \times 2.2714 = 1135.7$ Rs

$H_3 = 200 \times 2.2714 + 200 \times 1.5 \times 2.2714 + 100 \times 2.1667 \times 2.2714 = 1627.84$ Rs

$H_5 = 200 \times 2.2714 + 200 \times 1.5 \times 2.2714 + 200 \times 2.1667 \times 2.2714 = 2119.98$ Rs

$H_7 = 200 \times 2.2714 + 200 \times 1.5 \times 2.2714 + 400 \times 2.1667 \times 2.2714 +$
$100 \times 2.33 \times 2.2714 = 3633.513$ Rs

Total = 9539.163

Coulted price = 16359.92

Extra price due to high uses

$= 9539.163 - 6359.92$

$= 3179.243$

Extra price / unit $= 1.1354$ Rs/unit

	unit	Price	
H_6	+ 1400	2	$(2+1.1354) \times 1400 = 4389.56$
		2.3	$(2.3+1.1354) \times 200 =$ ~~2358~~ 687.08
H_9	+ 200		
		2.5	$(2.5+1.1354) \times 700 = 2544.78$
H_8	+ 700		
		2.7	$(2.7+1.1354) \times 500 = 1917.7$
H_1	+ 1200		9539.12

↳ Sold only 500 unit

if they would have bought from utility.

H_4	-100	$= 100 \times 3$	$= 300$
H_{10}	-300	$= 200 \times 3 + 100 \times 4.5$	$= 1050$
H_2	-400	$= 200 \times 3 + 200 \times 4.5$	$= 1500$
H_3	-500	$= 200 \times 3 + 200 \times 4.5 + 100 \times 6.5$	$= 2150$
H_5	-600	$= 200 \times 3 + 200 \times 4.5 + 200 \times 6.5$	$= 2800$
H_7	-900	$= 200 \times 3 + 200 \times 4.5 + 400 \times 6.5 + 100 \times 7$	$= 4800$
	-2800		$= 12600$

Utility having price 3060.837 higher then this systems.