

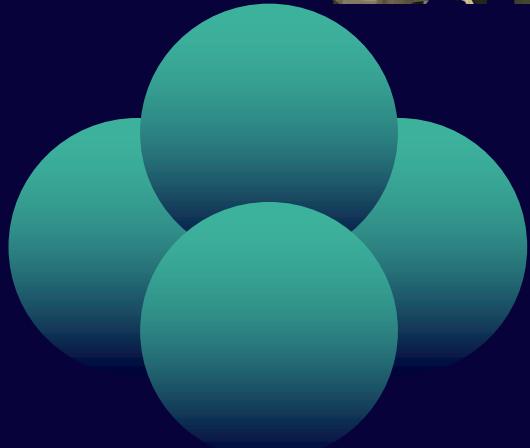
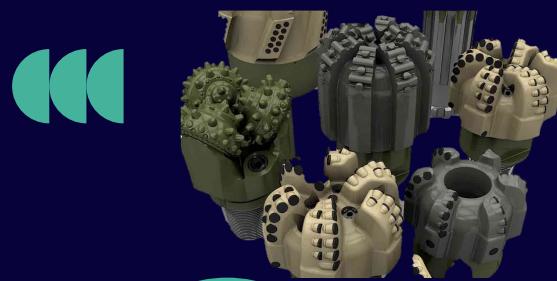


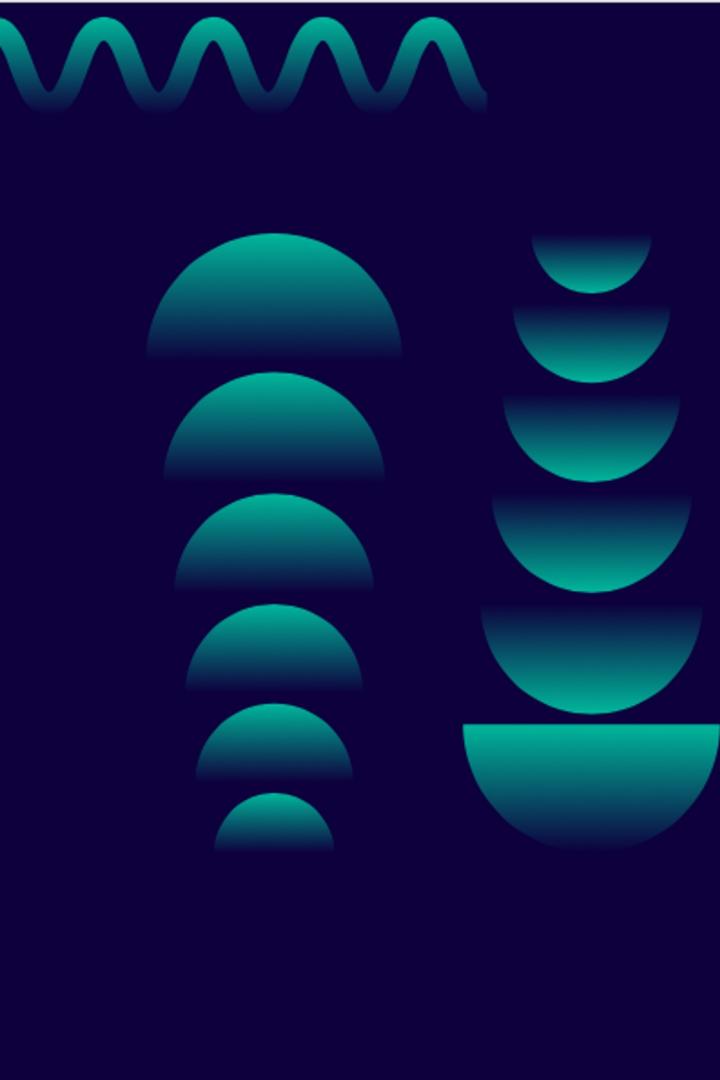
Green Company Group 6

Elena Torre Salvatierra, Diego Denys,
Camilo Ulloa



VIDEO





DD

Introduction



01.

- During the 1940's, linear programming was first used by Leonid Kantorovich to develop a mathematical model to reduce the cost of the armies expenses.
 - In our time this mathematical model is used by firms to maximize their profit at the best change for the quantity produced
 - Using our resources to the best possible solution for our problem...
- 



02.

Green Company

The world's largest oilfield
services company with
presence in more than 85
countries



Problem

Sales



Cost

2010 ➤ Q1 2019

From: Green Company

We would like to maximize our sales for Q2 2019, taking into account: requirements of forecast made on Q1 2019 sales performance; available inventory of BITS for Q2 sales; maintaining the profit level.

Ps: Please take into consideration our Q4 2018 performance related to BIT Type percentage incremental as our technical goal.



BIT TYPE	REVENUE INCREMENTAL GOAL / Q (%)	DRIVER
PDC NT	12%	Focused on best-selling products after analysis and with higher price to address new technology
PDC R	8%	Focused on best-selling products after analysis, with a expected trend increase base on forecasted activity increase
RT	3%	Set as commodity for the rest of the products
RI	1%	Set as commodity for the rest of the products

BIT TYPE	DEFINITION
RT	ROLLER TOOTH
RI	ROLLER INSERT
PDC R	PDC REGULAR TECH
PDC NT	PDC NEW TECHNOLOGY
PDC	POLYCRYSTALINE DIAMOND COMPACT

- Drill Bit: Drill Bit for oilfield operation



Data

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Sales period January-2019

SALES PERIOD		January-19							
BIT TYPE	NAME	SIZE	QTY	COST	RENT	SALE	PROFIT		
RT	A-RT	12 1/4	1	\$ 7,500.00	\$ 8,500.00	\$ 15,000.00	\$ 7,500.00		
	B-RT	16	2	\$ 15,000.00	\$ 8,000.00	\$ 60,000.00	\$ 45,000.00		
	C-RT	26	1	\$ 12,500.00	\$ 4,000.00	\$ 25,000.00	\$ 12,500.00		
	D-RT	8 1/2	1	\$ 8,345.00	\$ 13,020.00	\$ 25,035.00	\$ 16,690.00		
RI	A-RI	26	2	\$ 28,267.64	\$ 8,000.00	\$ 141,338.20	\$ 113,070.56		
PDC R	A-PDC R	6 1/8	1	\$ 11,234.00	\$ 12,236.00	\$ 44,936.00	\$ 33,702.00		
	B-PDC R	16	3	\$ 15,027.34	\$ 94,500.00	\$ 60,109.36	\$ 45,082.02		
	C-PDC R	8 1/2	2	\$ 17,913.00	\$ 48,000.00	\$ 71,652.00	\$ 53,739.00		
	D-PDC R	12 1/4	2	\$ 23,854.64	\$ 47,986.00	\$ 119,273.20	\$ 95,418.56		
	F-PDC R	12 1/4	2	\$ 22,577.07	\$ 110,500.00	\$ 67,731.21	\$ 45,154.14		
	G-PDC R	8 1/2	1	\$ 13,334.00	\$ 44,000.00	\$ 66,670.00	\$ 53,336.00		
	A-PDC NT	8 1/2	2	\$ 14,415.49	\$ 41,500.00	\$ 57,661.96	\$ 43,246.47		
PDC NT	B-PDC NT	8 1/2	1	\$ 15,910.68	\$ 16,500.00	\$ 79,553.40	\$ 63,642.72		
	C-PDC NT	12 1/4	5	\$ 25,828.01	\$ 312,219.00	\$ 103,312.04	\$ 77,484.03		
	D-PDC NT	8 1/2	1	\$ 16,616.66	\$ 23,000.00	\$ 33,233.32	\$ 16,616.66		
	E-PDC NT	12 1/4	1	\$ 24,264.34	\$ 29,000.00	\$ 48,528.68	\$ 24,264.34		



Sales period February-2019

SALES PERIOD		February-19					
BIT TYPE	NAME	SIZE	QTY	COST	RENT	SALE	PROFIT
RT	A-RT	6 1/8	6	\$ 8,345.00	\$ 55,200.00	\$ 16,690.00	\$ 8,345.00
	B-RT	12.25	1	\$15,000.00	\$ 55,400.00	\$ 75,000.00	\$ 60,000.00
	C-RT	16	1	\$15,000.00	\$ 15,000.00	\$ 60,000.00	\$ 45,000.00
	D-RT	8 1/2	1	\$ 6,246.00	\$ 10,250.00	\$ 12,492.00	\$ 6,246.00
RI	A-RI	26	1	\$28,267.64	\$ 8,000.00	\$ 56,535.28	\$ 28,267.64
	B-RI	6	1	\$ 8,140.00	\$ 10,017.00	\$ 16,280.00	\$ 8,140.00
PDC R	A-PDC R	16	3	\$15,027.34	\$ 97,500.00	\$ 45,082.02	\$ 30,054.68
	B-PDC R	12 1/4	1	\$22,577.07	\$ 50,000.00	\$112,885.35	\$ 90,308.28
	C-PDC R	8 1/2	1	\$17,913.00	\$ 18,000.00	\$ 89,565.00	\$ 71,652.00
	D-PDC R	6 1/8	2	\$11,234.00	\$ 15,400.00	\$ 44,936.00	\$ 33,702.00
PDC NT	A-PDC NT	12 1/4	1	\$25,828.01	\$ 36,400.00	\$ 77,484.03	\$ 51,656.02
	B-PDC NT	8 1/2	2	\$24,264.34	\$ 33,236.00	\$ 72,793.02	\$ 48,528.68





Sales period March-2019

SALES PERIOD		March-19					
BIT TYPE	NAME	SIZE	QTY	COST	RENT	SALE	PROFIT
RT	A-RT	16	3	\$15,000.00	\$ 81,967.00	\$ 45,000.00	\$ 30,000.00
RI	A-RI	26	2	\$28,267.64	\$ 8,000.00	\$ 56,535.28	\$ 28,267.64
PDC R	A-PDC R	8.5	1	\$13,334.00	\$ 8,000.00	\$ 40,002.00	\$ 26,668.00
	B-PDC R	16	1	\$15,027.34	\$ 6,000.00	\$ 75,136.70	\$ 60,109.36
	C-PDC R	12 1/4	3	\$22,577.07	\$ 88,650.00	\$ 90,308.28	\$ 67,731.21
	D-PDC R	12 1/4	1	\$23,854.64	\$ 15,000.00	\$ 95,418.56	\$ 71,563.92
	F-PDC R	8 1/2	1	\$18,084.00	\$ 20,000.00	\$ 36,168.00	\$ 18,084.00
	G-PDC R	8 1/2	1	\$17,913.00	\$ 12,000.00	\$ 71,652.00	\$ 53,739.00
	H-PDC R	8 1/2	2	\$11,234.00	\$104,000.00	\$ 44,936.00	\$ 33,702.00
	I-PDC R	6 1/8	2	\$13,334.00	\$ 31,857.12	\$ 26,668.00	\$ 13,334.00
	J-PDC R	6 1/8	2	\$11,234.00	\$ 25,481.52	\$ 44,936.00	\$ 33,702.00
PDC NT	A-PDC NT	12 1/4	1	\$25,828.01	\$ 90,000.00	\$103,312.04	\$ 77,484.03
	B-PDC NT	16	1	\$27,916.00	\$ 15,200.00	\$ 83,748.00	\$ 55,832.00

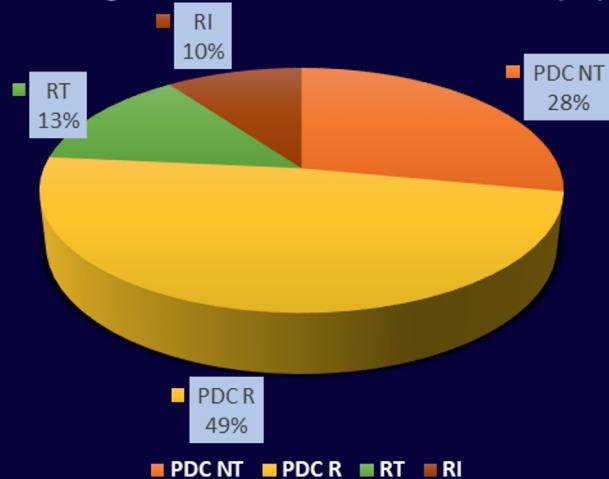
Forecast



BIT TYPE	REVENUE INCREMENTAL GOAL / Q (%)	DRIVER
PDC NT	12%	Focused on best-selling products after analysis and with higher price to address new technology
PDC R	8%	Focused on best-selling products after analysis, with a expected trend increase base on forecasted activity increase
RT	3%	Set as commodity for the rest of the products
RI	1%	Set as commodity for the rest of the products

BIT TYPE	Q1 REVENUE	REVENUE INCREMENTAL GOAL / Q (%)	INCREASE	EXPECTED SALE
PDC NT	\$ 1,113,884.13	12%	\$ 133,666.10	\$ 1,247,550.23
PDC R	\$ 1,998,103.40	8%	\$ 159,848.27	\$ 2,157,951.67
RT	\$ 582,667.00	3%	\$ 17,480.01	\$ 600,147.01
RI	\$ 440,294.60	1%	\$ 4,402.95	\$ 444,697.55

Drilling Bit Market Distribution (%)



PDC NT



BIT Type	TYPE	NAME	SIZE	QTY/Q	UNIT COST	TOTAL COST	AVERAGE SALE	SALE	GROSS NET	GROSS PROFIT
PDC NT	A	PDC NT	16	1	\$ 27,916.00	\$ 27,916.00	\$ 83,748.00	\$ 83,748.00	\$ 55,832.00	67%
	B	PDC NT	12 1/4	8	\$ 25,437.09	\$ 203,496.74	\$ 83,159.20	\$ 665,273.58	\$ 461,776.84	69%
	C	PDC NT	8 1/2	6	\$ 17,801.79	\$ 106,810.76	\$ 60,810.43	\$ 364,862.55	\$ 258,051.80	71%
TOTAL				15		\$ 338,223.50		\$ 1,113,884.13	\$ 775,660.64	70%

Q2 Constraints definition

Max	\$1,113,884.13			
S.T	16"	≤	1	
	12.25"	≤	10	
	8.5"	≤	8	
	q1, q2 ,q3	≥	0	
	\$ 1,113,884.13	≥	\$1,247,550.23	

Q2 Availability

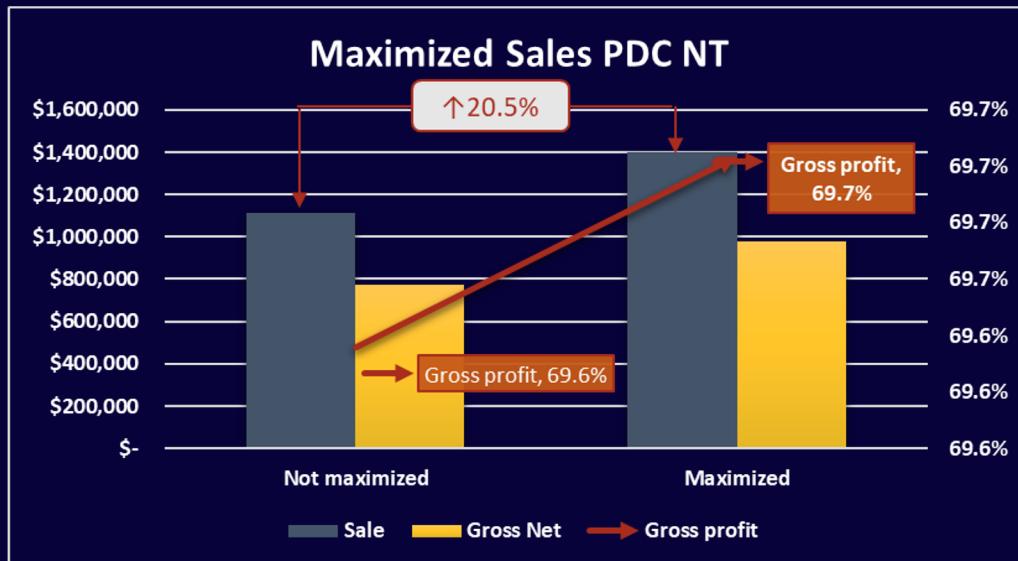
BIT Type	TYPE	NAME	SIZE	QTY/Q	UNIT COST	TOTAL COST	AVERAGE SALE	SALE	GROSS NET	GROSS PROFIT
PDC NT	A	PDC NT	16	1	\$ 27,916.00	\$ 27,916.00	\$ 83,748.00	\$ 83,748.00	\$ 55,832.00	67%
	B	PDC NT	12 1/4	10	\$ 25,437.09	\$ 254,370.93	\$ 83,159.20	\$ 831,591.98	\$ 577,221.05	69%
	C	PDC NT	8 1/2	8	\$ 17,801.79	\$ 142,414.34	\$ 60,810.43	\$ 486,483.40	\$ 344,069.06	71%
TOTAL				19		\$ 424,701.27		\$ 1,401,823.38	\$ 977,122.11	70%

Results PDC NT



INCREASE		
	%	\$
REVENUE	20.5%	\$ 287,939.25
PROFIT	20.6%	\$ 201,461.48

	Sale	Gross Net	Gross profit
Not maximized	\$ 1,113,884.13	\$ 775,660.64	69.6%
Maximized	\$ 1,401,823.38	\$ 977,122.11	69.7%



PDC R



BIT TYPE	TYPE	NAME	SIZE	QTY/Q	UNIT COST	TOTAL COST	AVERAGE SALE	SALE	GROSS NET	GROSS PROFIT
PDC R	A	PDC R	16	7	\$ 15,027.34	\$ 105,191.38	\$ 60,109.36	\$ 420,765.52	\$ 315,574.14	75%
	B	PDC R	12 1/4	9	\$ 23,088.10	\$ 207,792.88	\$ 97,123.32	\$ 874,109.88	\$ 666,317.00	76%
	C	PDC R	8 1/2	7	\$ 15,273.50	\$ 106,914.50	\$ 60,092.14	\$ 420,645.00	\$ 313,730.50	75%
	D	PDC R	6 1/8	7	\$ 11,759.00	\$ 82,313.00	\$ 40,369.00	\$ 282,583.00	\$ 200,270.00	71%
TOTAL				30		\$ 502,211.76		\$1,998,103.40	\$1,495,891.64	75%

Q2 Constraints definition

Max	\$1,998,103.40		
S.T	16	≤	8
	12 1/4	≤	10
	8 1/2	≤	8
	6.125	≤	8
	q1, q2 ,q3, q4	≥	0
	\$1,998,103.40	≥	\$2,157,951.67

Q2 Availability

BIT TYPE	TYPE	NAME	SIZE	QTY/Q	UNIT COST	TOTAL COST	AVERAGE SALE	SALE	GROSS NET	GROSS PROFIT
PDC R	A	PDC R	16	8	\$ 15,027.34	\$ 120,218.72	\$ 60,109.36	\$ 480,874.88	\$ 360,656.16	75%
	B	PDC R	12 1/4	10	\$ 23,088.10	\$ 230,880.98	\$ 97,123.32	\$ 971,233.20	\$ 740,352.22	76%
	C	PDC R	8 1/2	8	\$ 15,273.50	\$ 122,188.00	\$ 60,092.14	\$ 480,737.14	\$ 358,549.14	75%
	D	PDC R	6 1/8	8	\$ 11,759.00	\$ 94,072.00	\$ 40,369.00	\$ 322,952.00	\$ 228,880.00	71%
TOTAL				34		\$ 567,359.70		\$2,255,797.22	\$1,688,437.52	75%

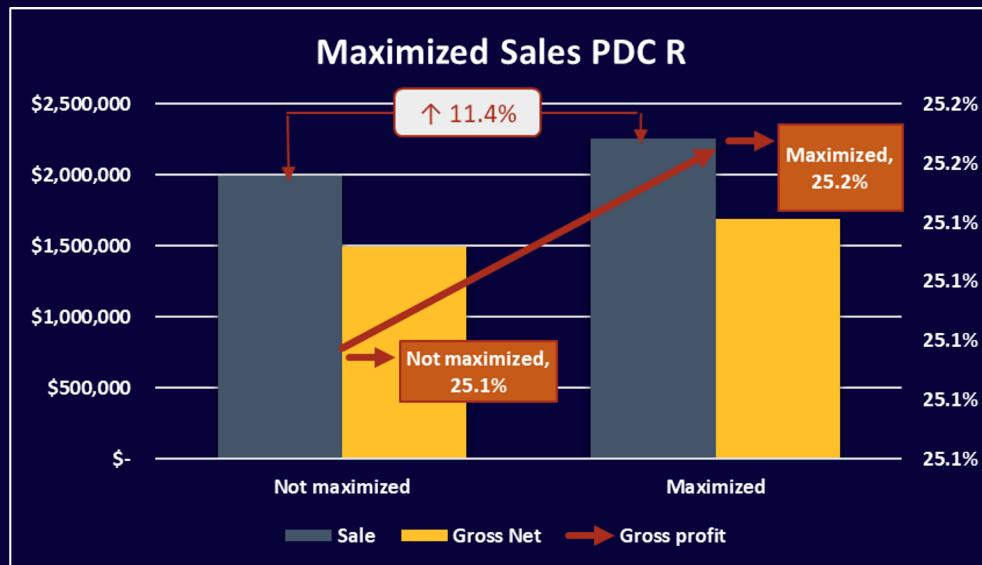
Results PDC R



INCREASE

	%	\$
REVENUE	11.4%	\$257,693.82
PROFIT	11.4%	\$192,545.88

	Sale	Gross Net	Gross profit
Not maximized	\$1,998,103.40	\$1,495,891.64	25.1%
Maximized	\$2,255,797.22	\$1,688,437.52	25.2%



RI



BIT TYPE	TYPE	NAME	SIZE	QTY/Q	UNIT COST	TOTAL COST	AVERAGE SALE	SALE	GROSS NET	GROSS PROFIT
RI	A	RI	26	5	\$ 28,267.64	\$ 141,338.20	\$ 84,802.92	\$ 424,014.60	\$ 282,676.40	67%
	B	RI	16	1	\$ 8,140.00	\$ 8,140.00	\$ 16,280.00	\$ 16,280.00	\$ 8,140.00	50%
TOTAL				6		\$ 149,478.20		\$ 440,294.60	\$ 290,816.40	66%

Q2 Constraints definition

Max	\$ 440,294.60			
S.T	26"	≤	5	
	16"	≤	1	
	q1, q2	≤	0	

Q2 Availability

BIT TYPE	TYPE	NAME	SIZE	QTY/Q	UNIT COST	TOTAL COST	AVERAGE SALE	SALE	GROSS NET	GROSS PROFIT
RI	A	RI	26	5	\$ 28,267.64	\$ 141,338.20	\$ 84,802.92	\$ 424,014.60	\$ 282,676.40	67%
	B	RI	16	1	\$ 8,140.00	\$ 8,140.00	\$ 16,280.00	\$ 16,280.00	\$ 8,140.00	50%
TOTAL				6		\$ 149,478.20		\$ 440,294.60	\$ 290,816.40	66%

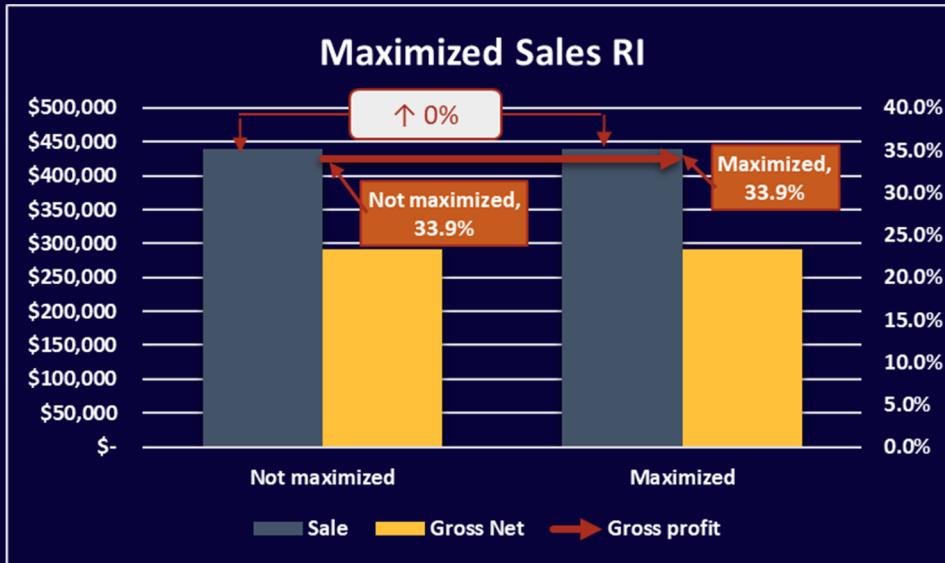
Results RI



INCREASE

	%	\$
REVENUE	0.0%	\$-
PROFIT	0.0%	\$-

	Sale	Gross Net	Gross profit
Not maximized	\$ 440,294.60	\$ 290,816.40	33.9%
Maximized	\$ 440,294.60	\$ 290,816.40	33.9%



RT



BIT TYPE	TYPE	NAME	SIZE	QTY/Q	UNIT COST	TOTAL COST	AVERAGE SALE	SALE	GROSS NET	GROSS PROFIT
RT	A	RT	26	1	\$ 12,500.00	\$ 12,500.00	\$ 25,000.00	\$ 25,000.00	\$ 12,500.00	50%
	B	RT	16	6	\$ 15,000.00	\$ 90,000.00	\$ 55,000.00	\$ 330,000.00	\$ 240,000.00	73%
	C	RT	12 1/4	2	\$ 11,250.00	\$ 22,500.00	\$ 45,000.00	\$ 90,000.00	\$ 67,500.00	75%
	D	RT	8 1/2	2	\$ 7,295.50	\$ 14,591.00	\$ 18,763.50	\$ 37,527.00	\$ 22,936.00	61%
	E	RT	6 1/8	6	\$ 8,345.00	\$ 50,070.00	\$ 16,690.00	\$ 100,140.00	\$ 50,070.00	50%
TOTAL				17		\$189,661.00		\$ 582,667.00	\$393,006.00	67%

Q2 Constraints definition

Max	\$ 582,667.00		
S.T	26"	≤	1
	16"	≤	6
	12 1/4	≤	2
	8.5	≤	2
	6.125	≤	6
q1, q2 ,q3, q4, q5		≥	0

} Q2 Availability

BIT TYPE	TYPE	NAME	SIZE	QTY/Q	UNIT COST	TOTAL COST	AVERAGE SALE	SALE	GROSS NET	GROSS PROFIT
RT	A	RT	26	1	\$ 12,500.00	\$ 12,500.00	\$ 25,000.00	\$ 25,000.00	\$ 12,500.00	50%
	B	RT	16	6	\$ 15,000.00	\$ 90,000.00	\$ 55,000.00	\$ 330,000.00	\$ 240,000.00	73%
	C	RT	12 1/4	2	\$ 11,250.00	\$ 22,500.00	\$ 45,000.00	\$ 90,000.00	\$ 67,500.00	75%
	D	RT	8 1/2	2	\$ 7,295.50	\$ 14,591.00	\$ 18,763.50	\$ 37,527.00	\$ 22,936.00	61%
	E	RT	6 1/8	6	\$ 8,345.00	\$ 50,070.00	\$ 16,690.00	\$ 100,140.00	\$ 50,070.00	50%
TOTAL				17		\$189,661.00		\$ 582,667.00	\$393,006.00	67%

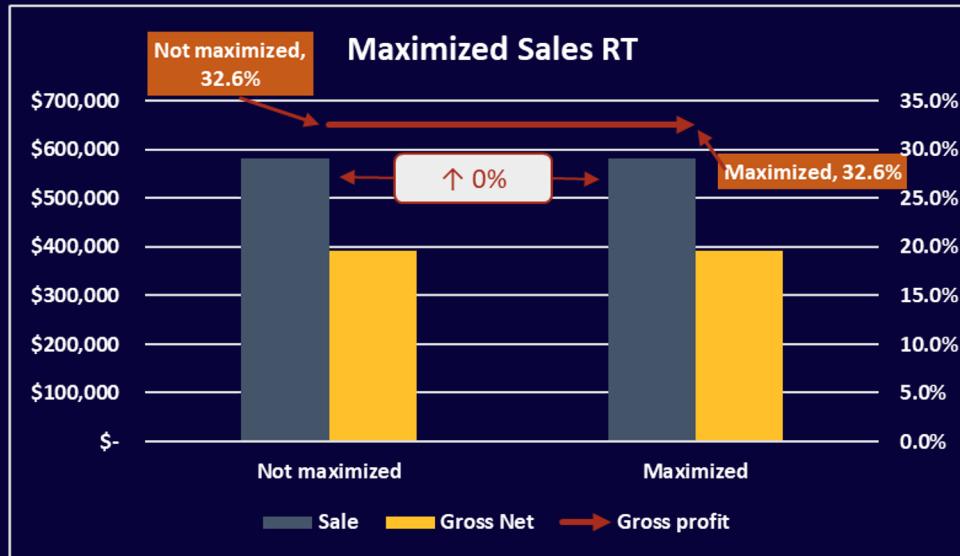
Results RT



INCREASE

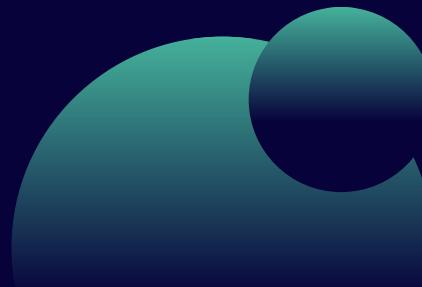
	%	\$
REVENUE	0.0%	\$-
PROFIT	0.0%	\$-

	Sale	Gross Net	Gross profit
Not maximized	\$582,667.00	\$ 393,006.00	32.6%
Maximized	\$582,667.00	\$ 393,006.00	32.6%



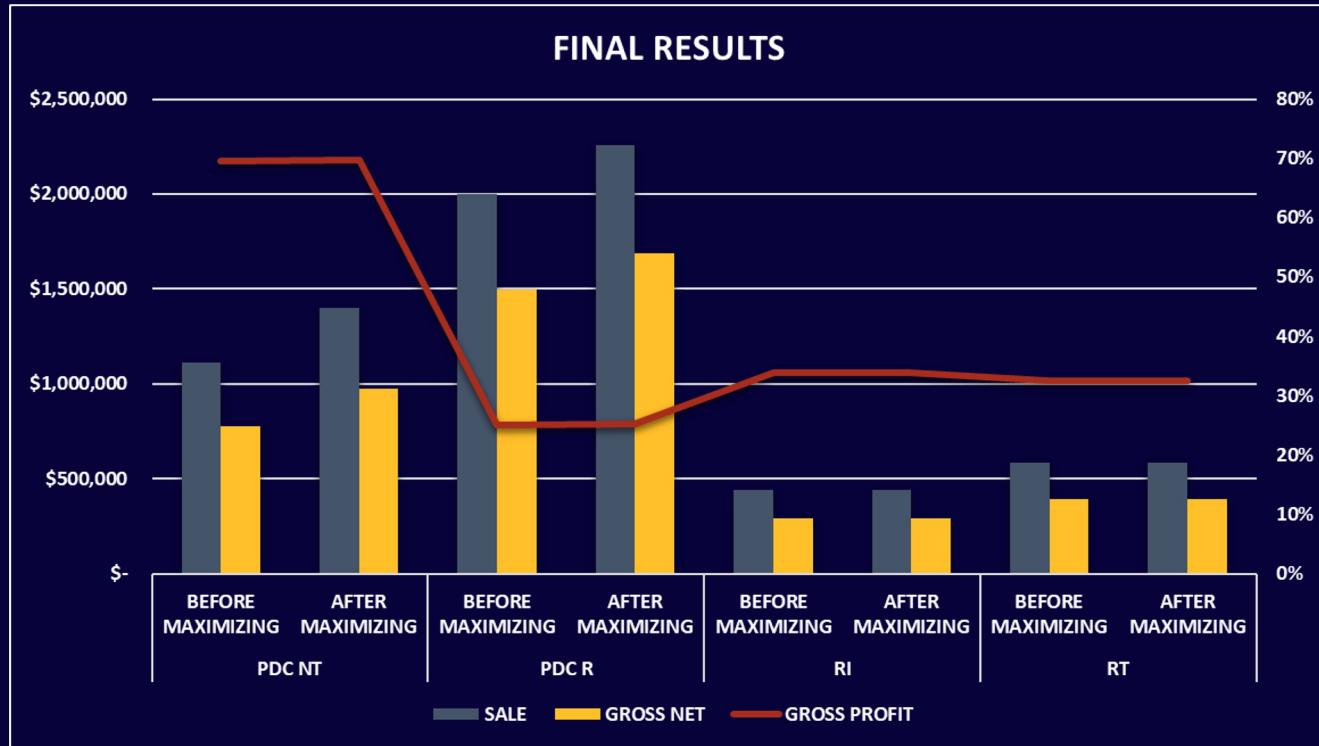
03.

Conclusion





Sale and Gross Net final results



- In terms of sales and gross net, we have maximized sales and as a consequence increased gross net, while maintaining the level of profits almost at the same level



Quantities Final Result



- In terms of Quantity, we have complied with the established inventory, using all available bits to maximize sales



Final results

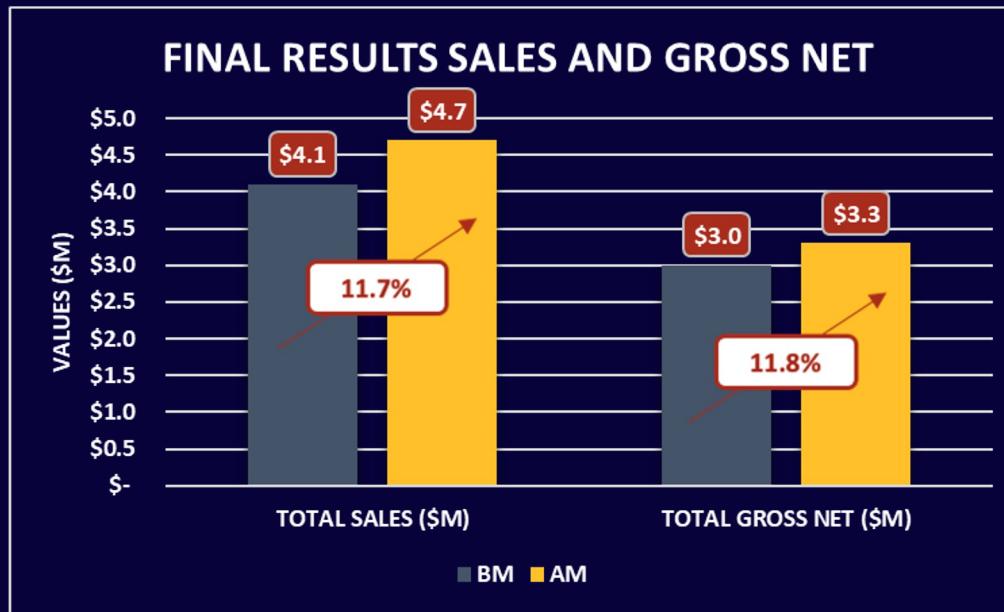
BIT TYPE		SALE	%	GROSS NET	%	GROSS PROFIT
PDC NT	BEFORE MAXIMIZING	\$1,113,884.13	20.5%	\$ 775,660.64	20.6%	69.6%
	AFTER MAXIMIZING	\$1,401,823.38		\$ 977,122.11		69.7%
PDC R	BEFORE MAXIMIZING	\$1,998,103.40	11.4%	\$1,495,891.64	11.4%	25.1%
	AFTER MAXIMIZING	\$2,255,797.22		\$1,688,437.52		25.2%
RI	BEFORE MAXIMIZING	\$ 440,294.60	0.0%	\$ 290,816.40	0.0%	33.9%
	AFTER MAXIMIZING	\$ 440,294.60		\$ 290,816.40		33.9%
RT	BEFORE MAXIMIZING	\$ 582,667.00	0.0%	\$ 393,006.00	0.0%	32.6%
	AFTER MAXIMIZING	\$ 582,667.00		\$ 393,006.00		32.6%

BIT TYPE		QUANTITY
PDC NT	BM	15
	AM	19
PDC R	BM	30
	AM	34
RI	BM	6
	AM	6
RT	BM	17
	AM	17



Final results

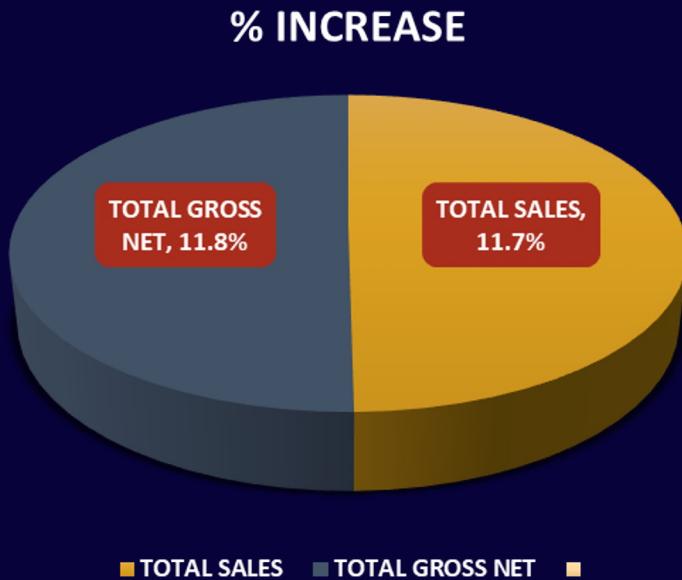
	TOTAL SALES (\$M)	TOTAL GROSS NET (\$M)
BM	\$ 4.1	\$ 3.0
AM	\$ 4.7	\$ 3.3





Final results

% INCREASE	
TOTAL SALES	11.7%
TOTAL GROSS NET	11.8%





Recommendations



Innovate RT and RI

Launching new RT and RI would convert both types of BITS in NT, increasing sales thus efficiency and getting new niche of demand in the market



What can
Green
Company do
to maximize
their sales for
Q2-2019?



Increase Quantity

By increasing the availability of inventory, after this analysis, Green Company could improve sales and higher profit. Capturing more MS



Focus on PDC NT

Focus on NT they want to spread into the market, but without leaving aside PDC R that is the one with stronger sells (high runner)