SAS OPTIMIZATION

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Introduction

Strategy Overview

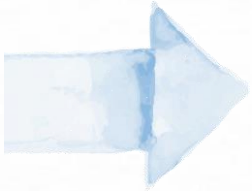
Goal

Minimize Cost

Contract 1

$0.15 / gallon

25,000 gallon / week (minimum)



Cost-Benefit Analysis

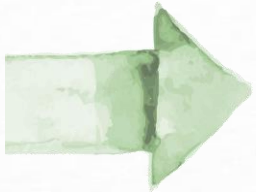
Higher price

Lower minimum

Contract 2

$0.12 / gallon

35,000 gallon / week (minimum)



Lower price

Higher minimum

02

Forecasting

Demand Forecasting

01

Historical Data

Examined Building T's weekly water usage from Mar. 29th 2020 - Jan. 2nd 2021

02

Data Preprocessing

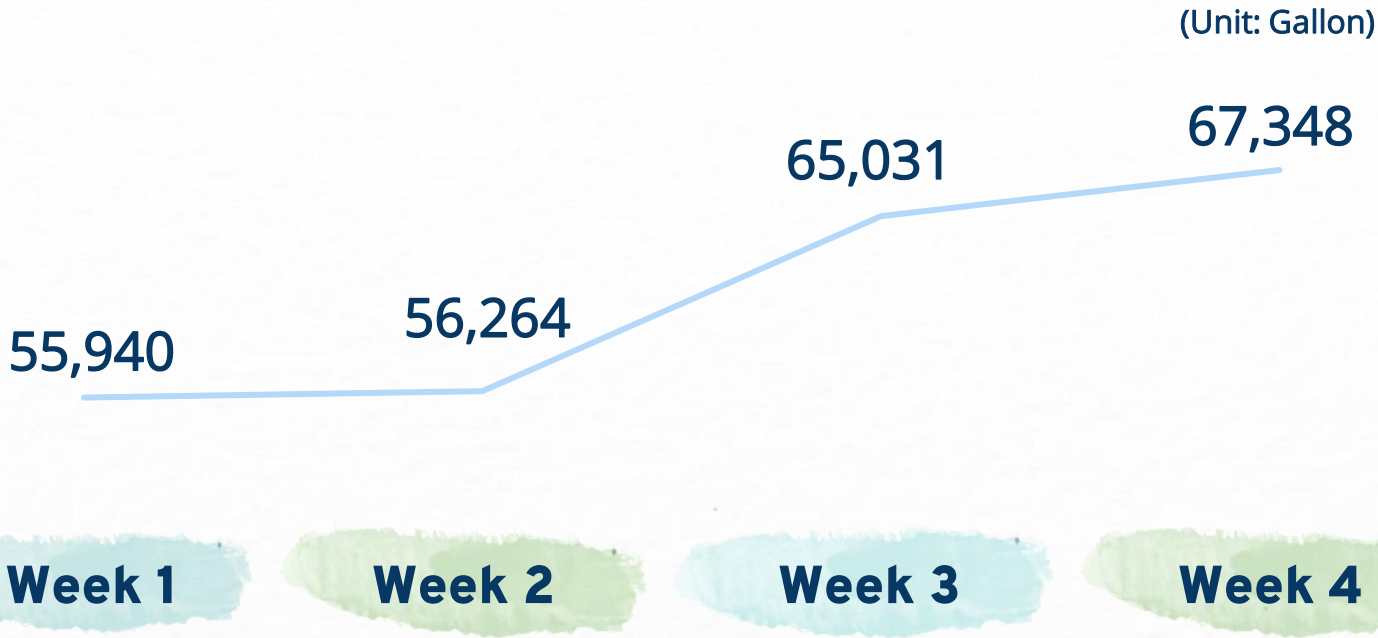
Combined data to get the complete usage of each week

03

Forecasting

Utilized machine learning to forecast the final four weeks of water usage

Total Weekly Demand



03

Contract 1

Cost | $0.15 per Gallon

Minimum Order | 25,000 Gallon

Contract 1: Week-By-Week Breakdown

	Week 1	Week 2	Week 3	Week 4
	$8,811	**$8,862**	**$8,049**	**$7,984**
From Contract	41,955	42,197	30,930	25,000
From Tank	13,985	14,065	34,101	42,348
Precipitation	12,000	18,000	20,000	22,000
Left in Tank	60,515	64,450	50,349	30,001

(Unit: Gallon)

$33,707

Final Cost for Contract 1

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Contract 2

Cost | $0.12 per Gallon

Minimum Order | 35,000 Gallon

Contract 2: Week-By-Week Breakdown

	Week 1	Week 2	Week 3	Week 4
	$7,552	**$7,596**	**$7,203**	**$7,435**
From Contract	41,955	42,198	35,000	35,000
From Tank	13,985	14,066	30,031	32,348
Precipitation	12,000	18,000	20,000	22,000
Left in Tank	60,515	64,449	54,418	44,070

(Unit: Gallon)

$29,786

Final Cost for Contract 2

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Comparison

Contract Comparison

	Contract 1	Contract 2	Difference
Total Cost	$33,707	$29,786	$3,921
Treatment Cost	$12,694	$11,287	$1,407
Purchase Cost	$21,013	$18,499	$2,514
Total Purchased	140,083 Gallons	154,152 Gallons	14,069 Gallons
End Balance in Tank	30,001 Gallons	44,070 Gallons	14,069 Gallons

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Conclusion

Contract 2

Total Water Cost: $29,786

Total Cost Savings: $3,921

THANKS