RIVERLOGIC

CASE STUDY

A Pulp & Paper Company Realizes Full Financial Impact on Operations, Logistics, and Capital Planning with River Logic's End-to-End Optimization Modeling

OVERVIEW

A pulp and paper company needed a single modeling solution that would enable it to easily run a series of operational, logistical, CAPEX and tax planning scenarios. The CFO also needed a solution that would give the company a forward-looking view of the financial impact every scenario would have. The company turned to River Logic to create an end-to-end optimization model to demonstrate the entire flow of materials and activity through four paper mills for the upcoming year. All products were currently being shipped direct to customers and could be shipped via truck or rail model.

CHALLENGE

- Would maximizing production volume increase profitability?
- How much would increasing total production effect profits?
- How should the company implement and take advantage of potential leasing opportunities?
- How can the company deliver a capital proposal to their Board with a full understanding of financial impact?

SOLUTION

An operational model was generated and initially solved to maximize production volume. When the model was solved with all logistics constraints turned 'off', it determined that the leasing opportunity could be pursued without effecting production volumes. When the model was solved to maximize net income, it revealed that scaling back total production was more profitable.

Increased production volumes resulted in increased average margins for most products. Further, elasticity curves considered the marginal impact of purchasing and selling higher volumes. Production managers were able to understand how their plant's activities would affect the overall plan and sales managers saw the impact of the optimal product mix on net sales.

RESULTS

- **OPERATIONAL IMPACT**
  - The model identified a potential increase in production volume of 65k tons.
  - When the model solved for maximum net income, it revealed a potential increase in market value of $500M and an increase of operating income of $63M.
- **LOGISTICS & CAPITAL PLANNING IMPACT**
  - When the model was solved with all logistics constraints turned 'off', it revealed a potential increase in market value of $77M and an increase in operating income of $9M.
  - The model also indicated that leasing DC #3 was the best opportunity and that all products at Mills A and D should be shipped through DC #3.
  - The model revealed a reduction in variable distribution expenses from $207M to $194M.

> **"Now we understood why increasing total production had less impact on profitability then we expected...We had an opportunity to lease space and labor from any four potential distribution centers in the area, but until now we had no way of knowing the full financial impact of doing so."**
>
> – The Corporate CFO