

# Minimum cost flow over time example:

An organization can procure cooking oil in two locations: Chicago or Kansas City. Procurement cost at Chicago is \$5 per barrel and in Kansas City \$8 per barrel. Oil is sent from the suppliers to either the port of Houston or Norfolk. The supplies then are ship to Haiti and Panama. All transportation capacities are set to 300,000 barrel. Transportation costs, supply and demand quantities over time, transportation lead times, and inventory holding capacities are given below. What is the minimum cost procurement and transportation strategy during the planning horizon?

Transportation + Handling Costs (\$) From		Kansas	Chicago	Houston	Norfolk
To	Houston	42	30		
	Norfolk	39	35		
	Panama			50	55
	Haiti			60	58

Transportation Lead times (weeks)		Houston	Norfolk	To Panama	Haiti
From	Kansas	1		1	
	Chicago	2		2	
	Houston				1
	Norfolk				2

Transportation arc capacity:	300
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	Panama	Haiti
Inventory holding capacity (barrels):	50	50
Inventory holding cost (\$):	1	1

Oil	Supply over time			
	W 1	W 2	W 3	W 4
Kansas	200	100	50	50
Chicago	200	100	100	0

Oil	Demand over time			
	W 3	W 4	W 5	W 6
Panama	50	100	100	50
Haiti	50	100	200	50