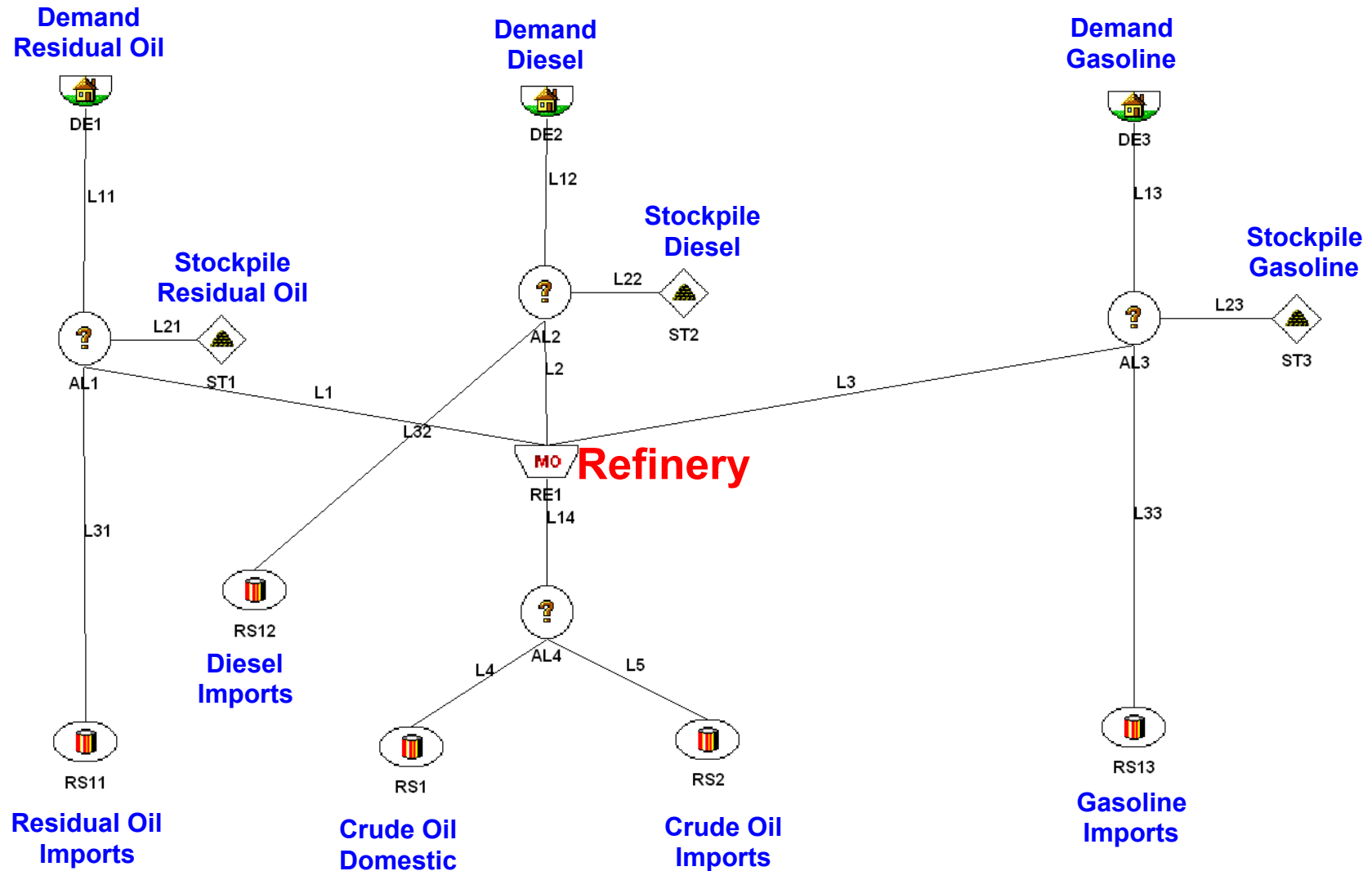
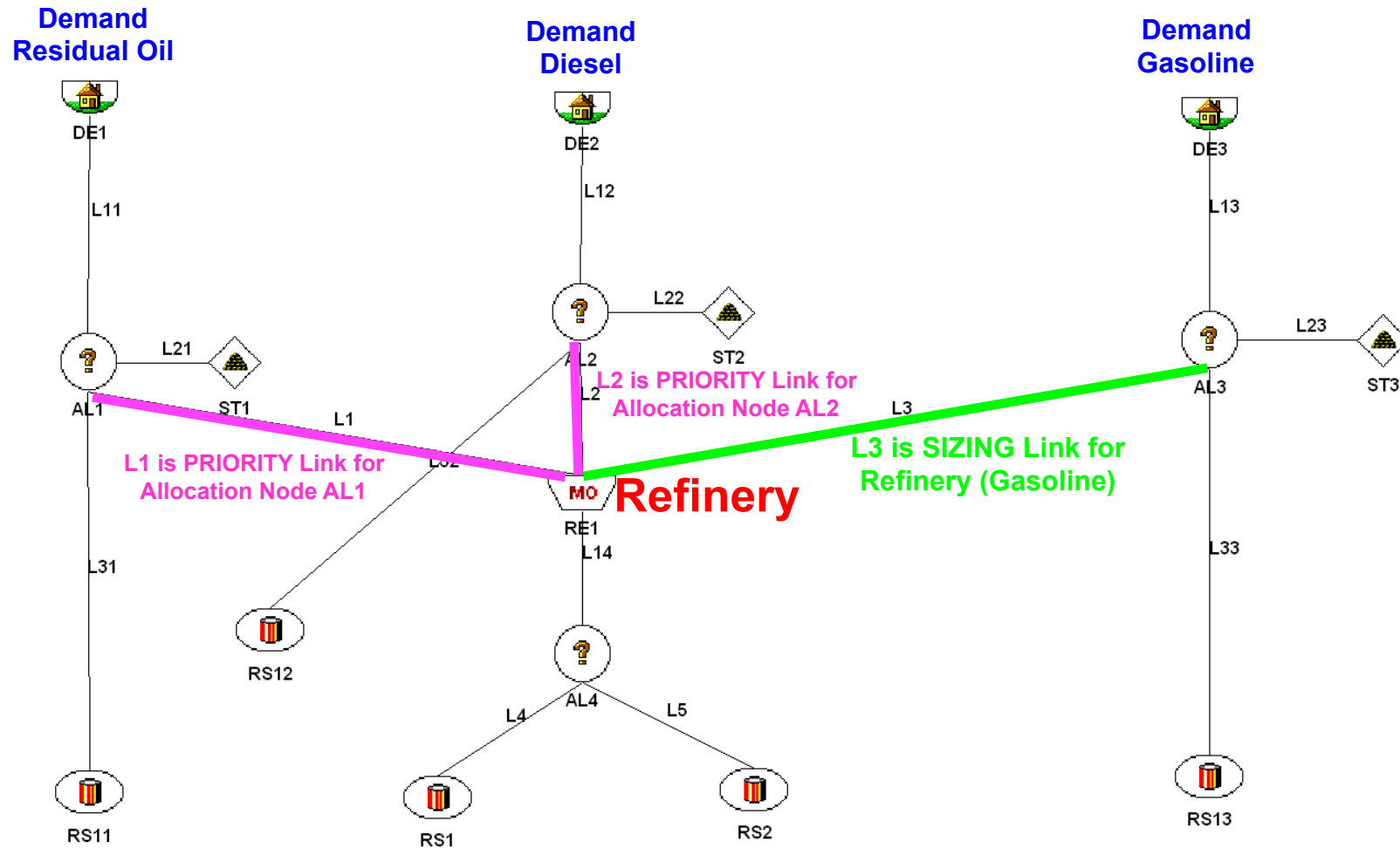


Refinery Case: Network Components



Refinery Case: Special Link Definitions



Refinery Case Input Data: Demand Nodes

- Base Year: 2000
- End Year: 2019 (study period = 20 years)
- *Note: You define base year and end year when you create a new case*

Demand Node	Annual Growth Rate (fraction)
DE1 (Residual Oil)	Blank each year (same as 0 each year)
DE2 (Diesel)	0.1 each year (10% growth)
DE3 (Gasoline)	0.05 each year (5% growth)



Refinery Case Input Data: Resource Nodes

Resource Node	Base Year Production (kBOE)	Capacity (kBOE)	Price Growth Rate (Fraction)	Curve Intercept or Base Year Price (\$/BOE)	Curve Slope and Curve Quadratic
RS1 (Crude Dom.)	500	999,999	Blank (or 0) each year	30	Both are blank (or 0)
RS2 (Crude Imp)	500	999,999	Blank (or 0) each year	10	Both are blank (or 0)
RS11 (Res Imp)	100	999,999	Blank (or 0) each year	20	Both are blank (or 0)
RS12 (Diesel Imp)	100	999,999	Blank (or 0) each year	35	Both are blank (or 0)
RS13 (Gasoline Imp)	0	999,999	Blank (or 0) each year	40	Both are blank (or 0)



Refinery Case Input Data: Decision-Allocation Nodes

Decision Node	Priority	Premium Multiplier	Base Year Split	Price Sensitivity	Lag Parameter
AL1 (Residual Oil)	From refinery Priority 1 (L1)	All blank	1.0	2.0	1.0
AL2 (Diesel)	From refinery Priority 1(L2)	All blank	1.0	2.0	1.0
AL3 (Gasoline)	No (all blank)	All blank	1.0	2.0	1.0
AL4 (Crude Oil)	No (all blank)	All blank	1.0	2.0	1.0



Refinery Case Input Data: Refinery Node

Output Link	O/I Ratio	Sizing Link	Price Ratio	Cost Recovery Link	Price Reference Link	Excess Demand Link
Residual Oil (L1)	0.2		Blank	YES	Blank	Imp Residual (L31)
Diesel (L2)	0.3		1.5		Residual (L1)	Imp Diesel (L32)
Gasoline (L3)	0.5	YES	1.2		Crude (L14)	Imp Gasoline (L33)

Single Plant Input Capacity = 1000 kBOE

All Plants Input Capacity = 999,999

Typical Capacity Factor = 1.0

Single Plant Capital Investment: 0

O&M cost = 10 \$/BOE input

Life expectancy = 40 years

Interest rate = 0.1

Profit factor = 0

ALL STOCKPILES: Leave all fields blank



Exercises for Training

- Case 1: Design and run the refinery base case
- Case 2: Change price sensitivities from 2 to 10 at all decision nodes
- Case 3: Change the lag parameter from 1.0 to 0.5 at all decision nodes
- Case 4: Change refinery capacity to 1500 kboe (all plants capacity) in 2010
- Case 5: Change energy resource prices as follows
 - Price growth rates: 1%/yr for RS1, 6%/yr for RS2, no change on imported products
- Case 6: Change energy resource prices as follows
 - Supply curves: no change on imported products, RS1 linear slope = 0.01; RS2 quadratic = 0.00002
- Case 7: Introduce constraint on imported crude oil (RS2): 1500 kBOE (2005); 1200 kBOE (2010); 1000 kBOE (2015)
- Case 8: Change the output sizing link to residual oil
- Case 9: Introduce a declining demand for gasoline, e.g. -0.05/year

Note: All variations are based on Case 1
Make a copy of Case 1, and then make the input changes

