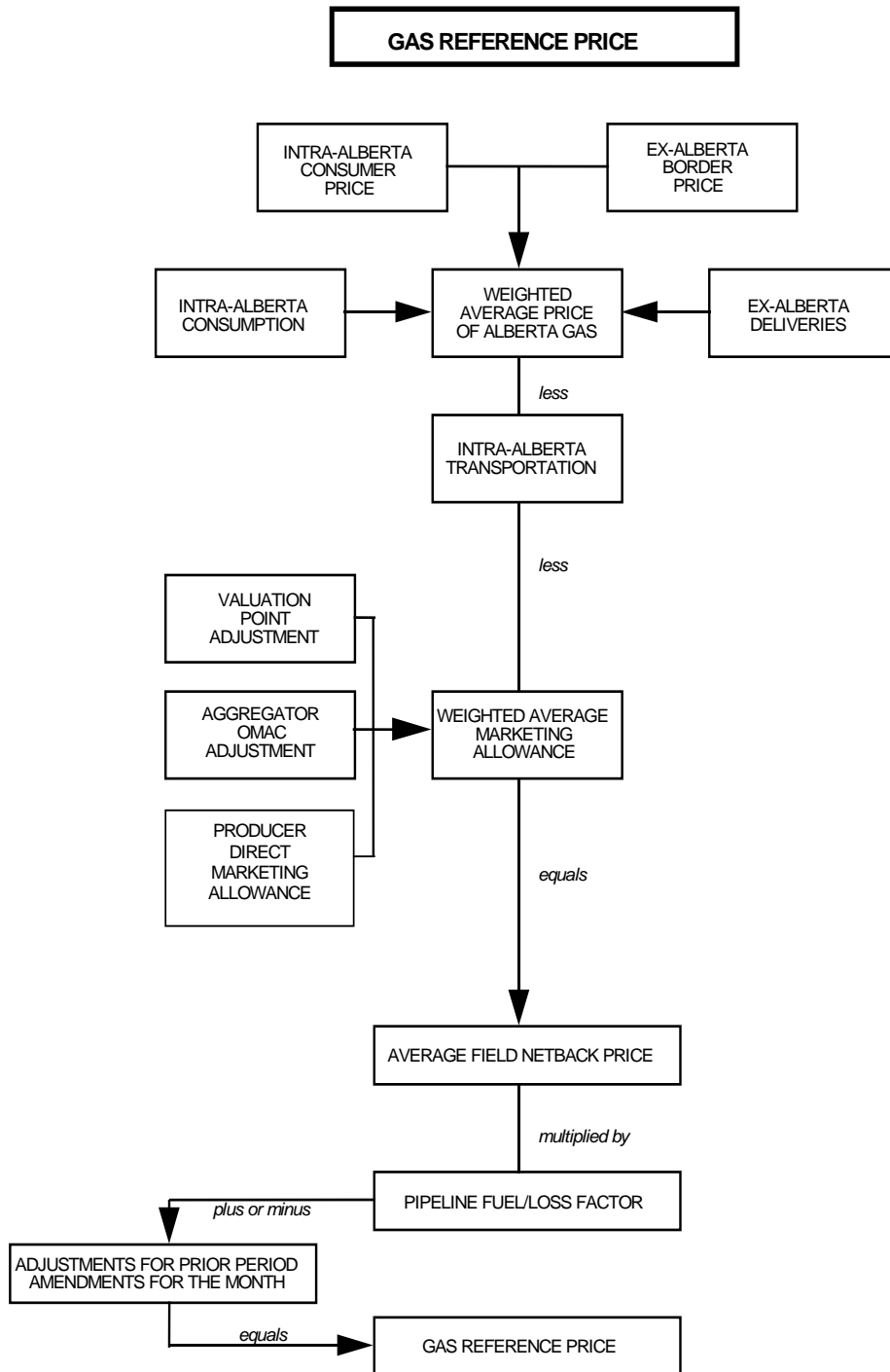


Appendix D

Calculation of the Gas and ISC Reference Prices



1. For ex-Alberta transactions, actual transportation costs net of any revenue resulting from brokered capacity (including demand and reservation charges) are deducted from sales value to determine the value reported at the export point. For ex-Alberta Gas Local Distribution Companies (LDCs) actual intra-Alberta transportation costs net of any revenue resulting from brokered capacity are added to intra-Alberta purchase value to determine the value reported at the export point.
2. The allowances for transporting gas in Alberta are:
 - a deduction for intra-Alberta transportation fees, *and*
 - a factor to recognize the costs of pipeline fuel consumption and gas loss.

The intra-Alberta transportation deduction is calculated using the Alberta costs of service, which is defined as Nova's cost-of-service plus costs incremental to Nova from the other **Included Pipelines**. The Alberta costs of service is divided by Alberta net billable receipts, which is defined as Nova's net billable receipts plus net billable receipts of the other included pipelines that are incremental to Nova's net billable receipts. Effective January 2003, Nova's costs of service also includes CO₂ management service billings, which are required to produce marketable gas. The **Pipeline Fuel/Loss Factor** uses Alberta net billable receipts divided by Alberta gross billable receipts, all information coming from the included pipelines. The department calculates both allowances for each production month.

The reference price calculation does not include deductions for take-or-pay costs. The department and industry will negotiate the treatment of such costs if and when it becomes necessary to do so.

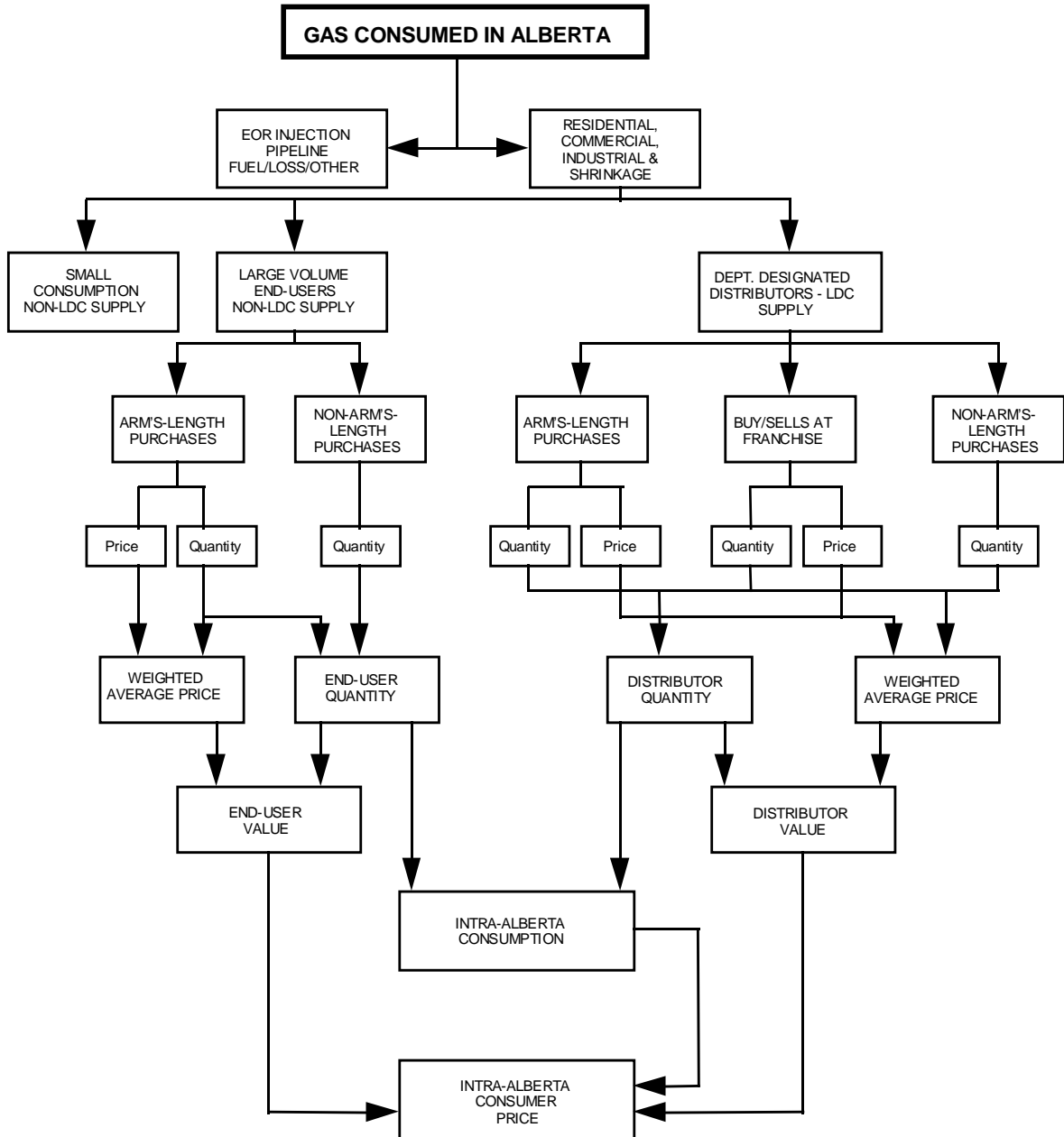
3. The weighted average **Marketing Allowance** is a weighted average of marketing costs incurred for producers' sales to three purchaser groups:
 - marketers,
 - aggregators, and
 - end users or distributors

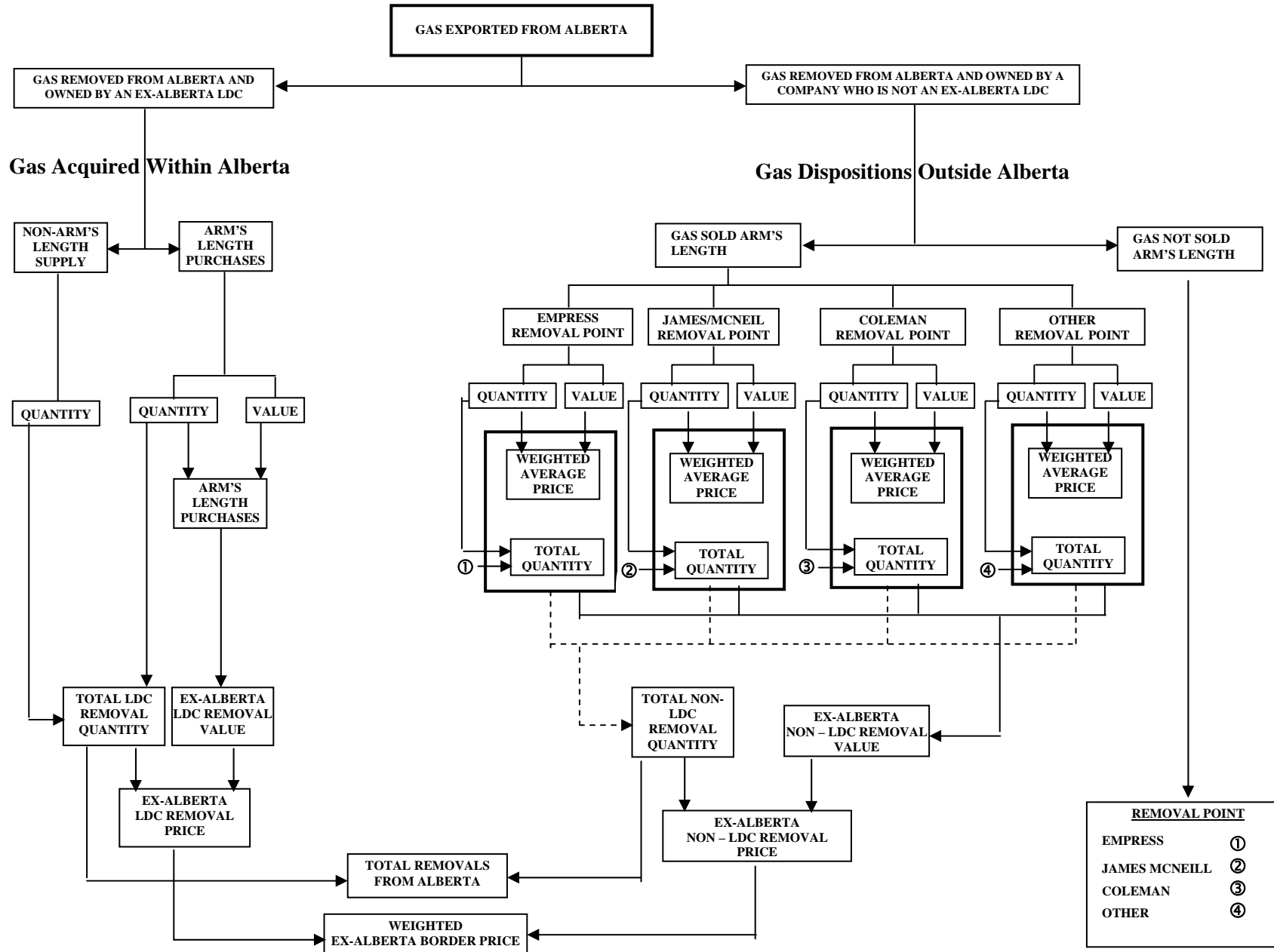
The adjustments attributable to each of these groups have been classified as follows:

- Valuation Point Adjustment (VPA) - is calculated as the average difference between purchases and sales prices obtained for companies identified as marketers by the department. This is multiplied by the total gas removals from Alberta in the previous year. Future average differences will be calculated based on department surveys of marketers;
 - Aggregator OMAC adjustment rate is determined by the department each month as a proxy for the overhead, marketing and administration charges of recognized aggregators. The rate will be the weighted average OMAC type deduction of the designated large aggregators multiplied by the total gas removals from Alberta in the previous year; *and*
 - Producer Direct Marketing Allowance – rate is determined by the department annually and is comprised of the VPA and aggregator OMAC adjustment. Calculation methodology is provided on page D3.
4. **Adjustments for Prior Period Amendments for the Month** are calculated as follows:
 - i. For every delivery month amended in the current month's gas reference price business period:
 - Recalculate the gas reference price before adjustments for prior period amendments and rounding;
 - Compare the recalculated gas reference price to the previous business period's gas reference price;

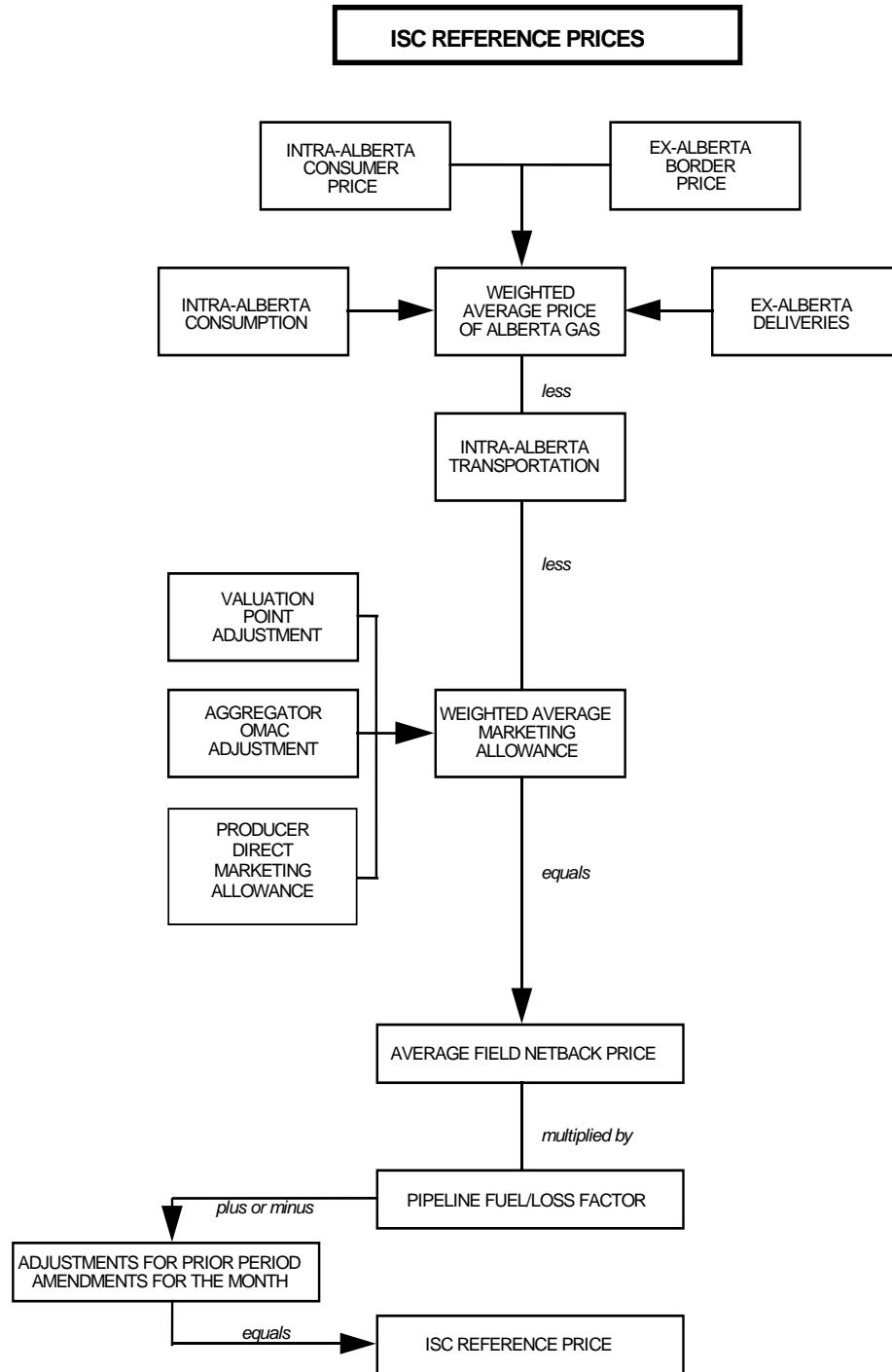
- The aggregators OMAC is a reasonable proxy for producers selling their own production directly to end users. Under contracts with aggregators, producers receive a price netback from the market less marketing type costs (OMAC).
- The VPA is calculated as the difference between a marketer's purchase price and his sales price, adjusted for transportation and fuel. The VPA is also a reasonable proxy for a producer conducting similar business.
- The method for determining the split between proprietary and 3rd party purchases is very approximate. Improving on this method would require additional reporting and auditing, as well as complex allocations, which are not desirable.

The following chart shows how the department calculates the **intra-Alberta consumers' price** from monthly arm's-length purchases by designated Local Distribution Companies (LDCs) and large volume end-users.





This chart shows how the Ministry calculates the **ex-Alberta border price** from arm's-length transactions reported by companies removing gas from Alberta. The distinct calculation for ex-Alberta Gas LDCs.



ISC Reference Price Calculation Details

1. The ISC reference price calculation utilizes the principles and information collection mechanism of the gas reference price. Some additional principles are followed:
 - a) ISC quantities in the ISC reference price calculations are determined from reported gas reference price quantities based on the percentage of each ISC in the gas stream.
 - b) ISCs that are consumed as gas are valued at reported gas prices.
 - c) Gas transportation costs are adjusted based on the ISC gigajoule content in a volume of gas.
 - d) The Alberta large volume end-user pool is split into a mainline straddle plant pool and other Alberta large volume end-user pool. The shrinkage value of the gas extracted at mainline straddle plants is used in the calculation of all ISCs except methane (C1).
2. Alberta mainline straddle plant NGL production is collected from mainline straddle plant operators and used to determine Alberta shrinkage consumption quantities for each of C2, C3, C4 and C5+ used in the calculation of the C2, C3, C4 and C5+ ISC reference prices. The average of all arm's length shrinkage supply costs (\$/GJ) at the Alberta mainline straddle plants will be used to value all reported heat content removed from the gas stream as reported by large volume end-users at all mainline straddle plants. Any excess quantities of associated dispositions to non-associated dispositions are excluded from the calculation and therefore, do not contribute to the calculation of the reference prices.
3. Ex-Alta arm's length sales quantity and sales value are reported at the first point of sale as well as Canadian and U.S. transportation costs and fuel gas from the Alberta border to the point of sale.
4. The component makeup of the stream at each point of removal from Alberta is calculated from pipeline information. This information is used to breakdown the Alberta quantities reported removed from Alberta by gas owners into components C1, C2, C3, C4, and C5+.
5. The component makeup of gas delivered for consumption within Alberta (non-shrinkage excluding storage) is obtained from a monthly report submitted by NGTL. This information is used as a proxy for all quantities consumed in Alberta (excluding heat content removed at mainline straddle plants) as reported by large volume end-users and designated distributors for system gas consumption.
6. Ex-Alberta transportation costs, including fuel gas, are allocated at each border point to C1, C2, C3, C4, C5+ on a percentage of volumes that each product represents of those five in the stream. The ex-Alberta transportation costs allocated to each product by volume are then divided by the total gigajoules of each product in the stream to determine a \$/GJ ex-Alberta transportation charge for each product. The unit (\$/GJ) ex-Alberta transportation charge is deducted from the sales price to determine the netback price of each product at the Alberta border.
7. The intra-Alberta transportation deduction in each ISC reference price is calculated from the Intra Alberta Transportation Deduction (IATD) in the gas reference price calculation. The gas IATD is adjusted in a similar manner to ex-Alberta transportation costs, using the ISC component makeup of field receipts of the included pipelines.

Facility Average Price (FAP) Calculation and Supporting Details

The valuation price for gas is calculated at the facility level. This Facility Average Price (FAP) is the facility aggregate (weighted) average reference price based on the ISC content within the royalty-triggered gas, less the facility gas transportation allowance.

Royalty triggered gas production at a facility, with some exceptions, will be assessed at FAP. See 'Points to remember for FARR% and FAP calculations' for exceptions.

FAP calculation (note: energy from inerts are excluded from FAP calculation)

Facility	Product	Delivery/Rec Location	(1) Quantity GJ	(2) Ref Price	(3)=(1)*(2)	(4) Adjusted IATD	(5)=(1)*(4)	(6) Meter Station Factor	(7)=(5)*(1)	(8)=Sum(3)/Sum(1) Facility Ref Price	(9)=Sum(5)/Sum(1) Facility Adj IATD	(10)=Sum(7)/Sum(1) Royalty Trig Factor	(11)=[(10) - 1]*(9) Gas Transportation Adjustment	(12)=(8)-(11) Valuation Price (FAP)
GP 0001**5	C1-IC	MS 0001105	1,872,162.00	\$4.91	\$9,192,315.42	\$0.299	\$559,776.44	1.05	1,965,770.100					
		MS 0002010	259,884.00	\$4.91	\$1,276,030.44	\$0.299	\$77,705.32	0.95	246,889.800					
		IF 0009**2	621,152.00	\$4.91	\$3,049,856.32	\$0.299	\$185,724.45	1.00	621,152.000					
C2-IC	MS 0001105	MS 0002010	461,816.00	\$5.14	\$2,373,734.24	\$0.171	\$78,970.54	1.05	484,906.800					
		MS 0002010	64,107.00	\$5.14	\$329,509.98	\$0.171	\$10,962.30	0.95	60,901.650					
		IF 0009**2	161,626.00	\$5.14	\$830,757.64	\$0.171	\$27,638.05	1.00	161,626.000					
C3-IC	MS 0001105	MS 0002010	250,558.00	\$5.36	\$1,342,990.88	\$0.120	\$30,066.96	1.05	263,085.900					
		MS 0002010	34,781.00	\$5.36	\$186,426.16	\$0.120	\$4,173.72	0.95	33,041.950					
		IF 0009**2	87,690.00	\$5.36	\$470,018.40	\$0.120	\$10,522.80	1.00	87,690.000					
C4-IC	MS 0001105	MS 0002010	34,404.00	\$5.43	\$186,813.72	\$0.093	\$3,199.57	1.05	36,124.200					
		MS 0002010	4,776.00	\$5.43	\$25,933.68	\$0.093	\$444.17	0.95	4,537.200					
		IF 0009**2	12,041.00	\$5.43	\$65,382.63	\$0.093	\$1,119.81	1.00	12,041.000					
C5+-IC	MS 0001105	MS 0002010	1,770.00	\$5.48	\$9,699.60	\$0.071	\$125.67	1.05	1,868.500					
		MS 0002010	246.00	\$5.48	\$1,348.08	\$0.071	\$17.47	0.95	233.700					
		IF 0009**2	619.00	\$5.48	\$3,382.12	\$0.071	\$43.95	1.00	619.000					
GP 0001**5			3,867,632.00		\$19,344,209.31		\$990,491.20		3,960,477.800	\$5.00	\$0.256	1.03	\$0.01	\$4.99

Points to remember for FARR% and FAP calculations:

- Same ISC product energy is used in calculation
- ISC product energy refers to the ISC *dispositions* at the charge facility that are royalty triggers. However, if charge facility is an injection facility, ISC product energy refers to the ISC *receipts* rather than the dispositions.
- Injection credits are valued at the FARR% of the injection facility and the FAP of the reproducing facility.
- Only C1-IC, C2-IC, C3-IC, C4-IC, C5+-IC product energies are used in calculation.
- Facility averages are different each production month because they are based on volumetric submissions and published royalty variables (royalty rates, reference prices, adjusted intra-Alberta transportation deductions, meter station factors). Once calculated and invoiced for a production month, facility averages will only change for that facility and production month if amendments are processed for volumetrics and meter station factors.
- The Crown royalty calculation of raw gas that is injected is valued at the FARR% of the injection facility and the FAP of the reproducing facility.
- Exceptions to FARR% and FAP:
 - Raw gas sale subsequently processed is assessed at raw gas average royalty rate and 80% of gas reference price.
 - Raw gas sale subsequently used for lease fuel is assessed at raw gas average royalty rate and 100% of gas reference price.