

GAS OPERATIONS INFORMATION BULLETIN ***October 2000***

Natural Gas Reference Price **Implementation of Multiple Gas Valuation Price**

In February of this year, the Alberta Energy Utilities Board approved in part an application by NOVA Gas Transmission Ltd. to implement a receipt point specific tolling methodology effective with April 2000 gas shipments. Shippers on NOVA's system will now pay different receipt transportation rates to deliver gas to various markets instead of the historical postage stamp rate.

In April 1999, Dr. West, then Minister of Resource Development, indicated that subject to Alberta Energy Utilities Board approval of a new tolling methodology, the Alberta government's natural gas royalty regime would incorporate, on a monthly basis, multiple gas reference prices. Dr. West further indicated that a single natural gas par price would be retained in a multiple natural gas reference price environment.

Since early 1999, a joint Industry and Department working group has been developing potential alternatives to a single Gas Reference Price and reviewing associated gas royalty issues. Gas Reference Price alternatives were reviewed in accordance with the following guidelines:

“An acceptable alternative will provide a representative market price (proxy versus actual) at a gas plant that adjusts for unique Alberta transportation costs, is simple to administer and understand, and is adaptable to changing business environments. It also retains the average Alberta Reference Price (market) concept but with varying Alberta transportation costs.”

The "Factor Model" emerged as the preferred alternative. Under this model, a factor calculated for each meter station is used to adjust the intra-Alberta transportation deduction in the current Gas Reference Price Calculation. If a factor is greater than one, indicating transportation rates greater than the Alberta average, a transportation adjustment is calculated that reduces the Gas Reference Price for production at that meter station.

The reverse is true where a meter station factor is less than one. A factor will be calculated for each meter station of each pipeline identified by the Department as included in this program. Generally, pipelines will be included if they have access to the ex-Alberta market and published tolls and tariffs. Production that is transported by a non-included Alberta pipeline will continue to be valued at the Alberta Gas Reference Price.

At this time, pipelines to be included are:

- NOVA Gas Transmission Ltd. (NGTL)
- Northwestern Utilities Limited (operating as ATCO Pipelines)
- ATCO Gas and Pipelines Ltd. (formerly Canadian Western Natural Gas Company Limited operating as ATCO Pipelines)
- Westcoast Transmission Company (Alberta) Ltd.
- AEC Suffield Gas Pipeline Inc.
- Alliance Pipeline Limited Partnership

A key component of the factor model implementation is the development of an information database that identifies physical connections between gas field facilities and meter stations of included pipelines. For the initial startup, the Department will provide the “AEUB Facility to Meter Station Connection Report” and the “Injection/Reproducing Facility Report” to operators for completion. Thereafter, operators will be responsible for reporting changes to the Department by submitting a completed TC 20 form. These reports together with instructions will be sent to operators in the near future.

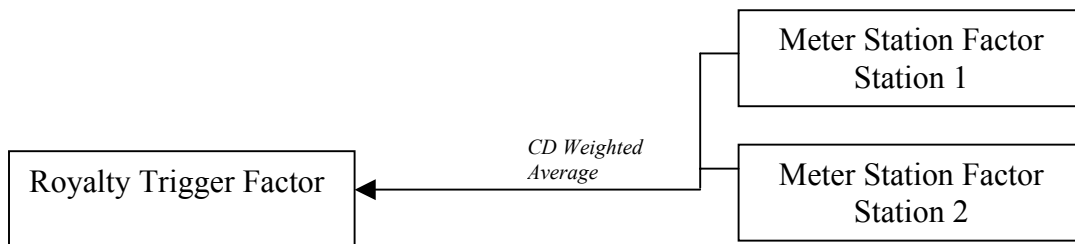
Currently, the expected implementation of the factor model will be effective with the January 2001 month of production, which will be invoiced at the end of March 2001.

This Information Bulletin addresses the accepted methodology, gas royalty business rules, reports required to be filed by industry clients and the reporting of information by the department to industry clients.

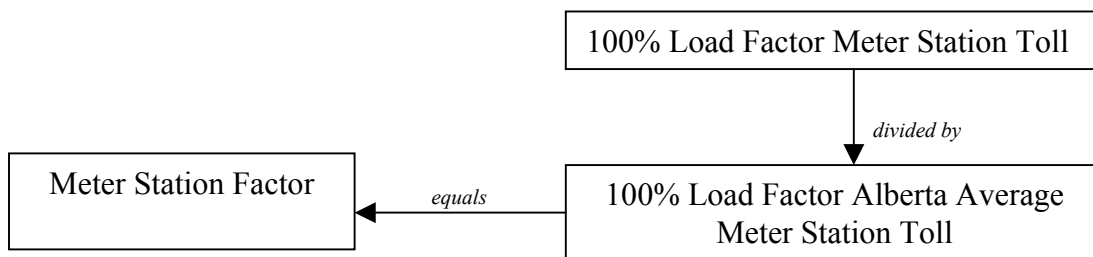
FACTOR MODEL

1. Basic Principles:

- The factor model requires the continued calculation of the existing Alberta Gas Reference Price, with major components being an overall Alberta Delivered Price (ADP) and an Intra-Alberta Transportation Deduction (IATD).
- The IATD is adjusted for each royalty trigger point by multiplying the IATD by a unique factor (rounded to two decimals) calculated for that royalty trigger point. Royalty trigger points with higher than average tolls receive a factor greater than one and therefore, a transportation adjustment that reduces the Gas Reference Price. The opposite applies to royalty trigger points with lower than average tolls.
- A factor at a royalty trigger point is normally the factor at a specific meter station. Where a trigger point can access more than one meter station, its factor is the average of the meter stations’ factors, weighted by firm service contract demand (CD).

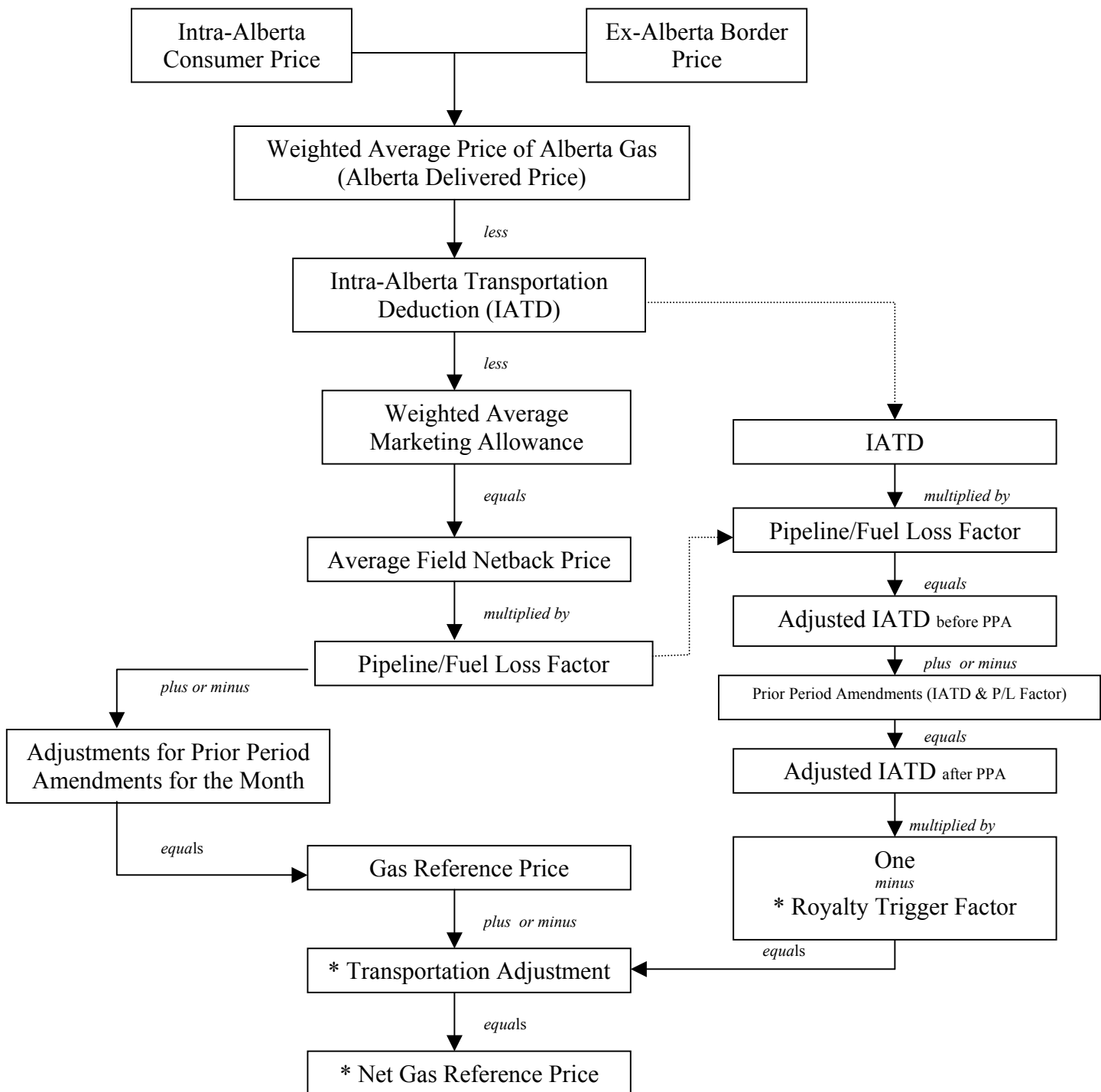


- The meter station factor is calculated as follows:



- Factors are calculated for all field receipt meter stations on all “included” Alberta pipelines. Normally, a pipeline is included by the Department if it has regulated tolls (not a proprietary pipeline) and physical access to the ex-Alberta market, either directly or by interconnection. Pipelines without regulated tolls (proprietary pipelines) could be included if deemed appropriate by the Crown.
- A royalty trigger point that connects to a meter station without a factor is assigned a factor of one. For example, a well supplying a small town without moving through an included pipeline receives a factor of one. A royalty trigger point upstream of a facility that is directly connected to a meter station is assigned a factor of one (except for injected raw gas, which will have the same factor as the reproducing facility).

2. Adjustment to the Gas Reference Price Calculation at each royalty trigger point:



* Specific to each royalty trigger point.

3. Intra-Alberta Transportation Deduction (IATD):

- The IATD continues to act as a proxy for the average intra-Alberta transportation rate in the Alberta Gas Reference Price calculation. As well the IATD continues to reflect the average load factor on pipelines within Alberta.
- Under the factor model, the IATD is calculated using costs and quantities of all included pipelines. Prior to this change, only NGTL's information had been used to determine the proxy.
- $IATD = \Sigma \text{billings} / \Sigma \text{billable receipt quantities} - (\text{NOVA Gas Transmission Ltd.}) \text{ plus incremental billings and incremental billable receipts of other included pipelines.}$

4. Pipeline Fuel/Loss Factor:

- The pipeline fuel/loss factor includes quantities from all included pipelines.

5. Adjustments for Prior Period Amendments (IATD & P/L Factor):

- If a published IATD or pipeline fuel/loss factor is amended for a prior delivery month, the unit difference between the Adjusted IATD calculation for the original business month and the calculation as amended is added to the current Gas Reference Price month's Adjusted IATD. There is no limit to the amount of prior period amendments that can be added to the current month's Adjusted IATD.

6. 100% Load Factor Meter Station Toll:

- The 100% Load Factor Meter Station Toll is calculated at each meter station on included pipelines as follows:

$$100\% \text{ Load Factor Meter Station Toll} = \begin{matrix} 100\% \text{ Load Factor Delivery Rate} + \\ 100\% \text{ Load Factor Receipt Rate} \end{matrix}$$

$$100\% \text{ Load Factor Delivery Rate} = \frac{\text{Export Delivery Billings} + \text{Intra-Alta Delivery Billings}}{\text{Total Receipt Contract Demand}}$$

1) 100% Load Factor Delivery Rate - is calculated for all receipt meter stations by prorating forecasted export delivery billings on all included pipelines to receipt CD of all included pipelines. Also included in the billings are intra-Alta delivery billings on pipelines, where gas was transported through other included pipelines before being transported on their system for final consumption.

- Export Delivery Billings: are calculated by multiplying the 100% Load Factor export delivery toll on NGTL by the total export CD for all included pipelines. The difference between the total toll on a non-NGTL included pipeline and the NGTL export delivery toll determines the 100% Load Factor Receipt Toll for the meter station of the non-included pipeline. This process, which also applies to NGTL's Load Retention Service (LRS), ensures that non-included pipelines - with different tolling methodologies - are properly equalized with NGTL for purposes of calculating a common factor.

For Alliance: the 100% Load Factor Total Toll (for Alberta) is calculated by:

- a) prorating the Canadian toll by the percentage that the Alberta mainline mileage is to the total of Alberta and Saskatchewan mainline mileage, and
 - b) then applying an adjustment for Alliance's Authorized Overrun percentage (AOP). The AOP is the rolling average of the preceding 3 years AOP except for the first year, which is determined by the Department in consultation with Alliance. Alliance's CD is grossed up by the AOP.
 - c) The multiplier for the toll is $100\%/AOP$. The multiplier for Alliance CD is the AOP.
- Intra-Alta delivery billings: are calculated by using forecasted CD or equivalent, multiplied by the 100% Load Factor delivery toll(s) for delivering gas on the included pipeline for final consumption. This gas had to have been received from another included pipeline.

2) 100% Load Factor Receipt Rate is calculated:

- At NGTL receipt points for non-Load Retention Service (LRS) by using NGTL's standard service base 100% Load Factor receipt tolls. This is currently the toll for 3 year firm service.
- At NGTL receipt points for LRS service by using the calculated rate as described under 6 (1).
- At NGTL receipt points for Point to Point service (intra-Alta points only - if and when this service is available) by using the 100% Load Factor total receipt/delivery toll.
- For ATCO Pipelines receipt points, by using the ATCO Pipelines 100% Load Factor receipt toll plus the market weighted ATCO Pipelines 100% Load Factor delivery tolls (exchange fee, Large Volume End users (LRS) delivery charge and system gas delivery charge). This calculation does not include any billings of ATCO Pipelines calculated and included under 6 (1).
- At Alliance receipt points by using the calculated rate as described under 6 (1).
- At AEC Suffield by using the calculated rate under 6 (1).
- West-coast (Alberta) will follow similar circumstances as the other included pipelines, where appropriate.
- If a standard receipt service base toll is unavailable, then a CD weighted average of the tolls in effect or some other proxy will be determined by the Department.

7. 100% Load Factor Alberta Average Meter Station Toll

- The 100% Load Factor Alberta Average Meter Station Toll is the weighted average (weighted by meter station CD) of the 100% Load Factor Meter Station Tolls on pipelines qualified for inclusion in the calculation. At this point in the calculation, Alliance's tolls (applicable to Alberta) and CDs have already been adjusted by the AOP.

8. General

- In the Factor model, there is only one factor at each royalty trigger point. Implementing the factor model requires the development and ongoing maintenance of a registry linking each royalty trigger point with the pipeline meter station(s) which serve it. If there is more than one meter station serving a royalty trigger point, the CD weighted average of the meter stations' factors is used as the royalty trigger factor. If a royalty trigger point is connected to two meter stations, one being an included pipeline and the other a non-included pipeline, the royalty trigger factor is the factor of the included pipeline meter station. A meter station's factor would not normally change during a year but a royalty trigger's factor could, depending on changes made to the registry throughout the year.
- A registry is maintained by the Department using information provided and validated by operators on an ongoing basis. The information is restricted to identifying facilities that are directly connected to pipeline meter stations. Facilities upstream of the direct connections are not identified. If an operator fails to file a report: a factor of 0 will apply to Crown royalty volumes; and a factor of 2 is applied to gas royalty injection credits. Once a form is filed, the correct factor is applied to the period affected.
- The factor for a meter station is determined annually and is in effect for October production, based on rates and CDs in effect for the previous April delivery month. The six month lag is designed to provide time to the Crown to validate the pipeline information used to calculate the annual meter station factors. Once the factors are established, they remain in effect for the year except for the addition of a new included pipeline. In this case all factors would be recalculated effective with the current production month following the validation of the new pipeline information. **Meter station factors and CDs are not recalculated once established except for the addition of a new included pipeline, and in any case not retroactively.**
- When a new meter station comes on stream during a year (excluding the global addition of meter stations for a new included pipeline), a factor and CD is established for that specific meter station effective with the first month of service. To calculate the factor for a new meter station, we use the existing 100% Load Factor Alberta Average Meter Station Toll for the denominator and the existing 100% Load Factor Delivery Rate in the calculation. The 100% Load Factor Receipt Rate is calculated as above. In this limited case a meter station factor may be established retroactively but not before the start of the current factor year.
- The factor at a meter station or at a royalty trigger point is rounded to two decimals.

9. Factor Model Example:

See [Attachment A](#)

10. Business Rule Changes Effective with Multiple Valuation Prices

1. Corporate Average Price Minimum Calculation

Current Rule - Annual Corporate Average price minimum is 90% of the weighted average annual Gas Reference Price.

New Rule - No changes from current rule. DRD review indicates that current rule remains reasonable.

2. Raw Gas - Not Injected

Current Rule - If raw gas is sold before processing but is subsequently processed, the royalty valuation is 80% of the Gas Reference Price. The 20% is in lieu of a processing credit.

New Rule - Valuation will remain unchanged. Valuation will be 80% of the Gas Reference Price (before transportation adjustments).

3. Raw Gas - Injected

Current Rule - Raw gas that is injected is valued at 100% of the Gas Reference Price.

New Rule - Raw gas that is injected is valued at the net gas reference price of the injection facility.

4. Gas Royalty Injection Credits

Current Rule - Valuation is the Gas Reference Price

New Rule - Credits will be based on the net gas reference price of the reproducing facility since it is not practical to track the gas to the production source. Injection facility operators would be required to identify the reproducing facility. If there is no reproducing facility a factor of 1 will be used. If a form is not filed, identifying whether or not there is a reproducing facility (and its identity), a default royalty trigger factor of zero will be used in the valuation of Crown royalty volumes and a default factor of 2 will be used to determine injection credits. Upon filing the TC20 the default factors will be reversed and the correct factors will be used to calculate royalty and injection credits.

11. Reporting to be filed by industry: Form TC20

Form TC20 is to be completed by operators of gas plants and gathering systems to report the gas plant/gathering system meter station – pipeline connection and reproducing facility meter station connection for injection schemes. The TC20 is due on or before the last day of the month following the month of production. Copy of the [TC20 is attached](#).

12. Monthly Invoice Reporting:

The following new data fields have been added to the Monthly Crown Royalty Detail Report.

- Meter Station number
- Meter Station Factor
- Calculated Contract Delivery per cent for royalty trigger
- Adjusted Intra-Alberta Transportation Deduction (IATD)

- Royalty Trigger Factor
- Transportation Adjustment
- Valuation Price.

For the UDF, Record 61 located on the UDF will be modified to include the adjusted IATD, Transportation Adjustment and the Gas Transportation Factor (royalty trigger factor). A new record 30 will be established for the meter station, meter station factor, and Contract Demand Percentage. The column for Storage Adjustment is to be removed from the existing format.

13. Published Information:

The department will publish the following initial information, and new information and changes to existing information, in the monthly Information Bulletin. This data will also be available on the department's web page at: (<http://www.resdev.gov.ab.ca/search/index.htm>).

- each facility meter station connection for only included pipelines.
- each meter station factor.
- each facility royalty trigger factor.
- Facility meter station connection of the reproducing facility for each injection scheme.

If you have questions on the factor model, please call Bill Zanewick at (403) 297-5465 or Deen Khan at (780) 422-9247 on the TC20 and business rules changes.

Carlene Edden
Director, Gas Operations
Alberta Department of Resource Development

FACTOR MODEL EXAMPLE

-The purpose of this example is to illustrate the workings of the factor model.
 -all numbers are fictional

Pipeline Name	Pipeline Receipt Meter Station	Receipt Rate Calculation/Comments	(1) 100% LF Receipt Rate (\$/mcf)	(2) Receipt Contract Demand (CD)(mcf/d)	(3) (1*2) Value \$	(4) (see below) 100% LF Delivery Rate	(5) (1+4) 100% LF Meter Station Toll	(5/7)
NGTL	3040		0.100	1,000	100	0.125	0.225	0.87
NGTL	3041		0.120	10,000	1,200	0.125	0.245	0.94
NGTL	3042		0.170	10,000	1,700	0.125	0.295	1.14
NGTL	3043		0.180	15,000	2,700	0.125	0.305	1.17
NGTL	3044	Meter Stations could have 3 different firm rates but only use base year rate for all CDs	0.070	10,000	700	0.125	0.195	0.75
NGTL	3045		0.210	10,000	2,100	0.125	0.335	1.29
NGTL	3055		0.120	10,000	1,200	0.125	0.245	0.94
NGTL	3065		0.080	20,000	1,600	0.125	0.205	0.79
NGTL	3066	Import point on Alta/BC border	0.150	10,000	1,500	0.125	0.275	1.06
Total				96,000	12,800			
NGTL*	3099	Regular service shared with LRS1	0.080	2,000	160	0.125	0.205	0.58
NGTL*	LRS1 - 3099	Receipt Rate = LRS rate(.12)-Nova Ex(.15)	-0.030	2,000	-60	0.125	0.095	0.58
NGTL	LRS2 - 4000	Receipt Rate = LRS rate(.25)-Nova Ex(.15)	0.100	2,000	200	0.125	0.225	0.87
Total				6,000	300			
Alliance	10000	Receipt Rate = Alliance Toll(.36)-Nova Ex(.15)	0.210	10,000	2,100	0.125	0.335	1.29
NUL	5000	Receipt Rate = NUL Receipt(.11)+NUL Delivery (.03	0.149	1,000	149	0.125	0.274	1.05
AEC	213	If pipeline has no base toll, use CD weighted average of the pipeline - Receipt Rate = AEC Toll (.17)-Nova Ex(.15)	0.020	1,000	20	0.125	0.145	0.56
Grand Total			0.135	114,000	15,369	0.125	0.260	1.00

(7) 100% Load Factor Average Alberta Meter Station Toll - CD weighted average of columns (2) and (5).

* If a meter station has LRS and Non-LRS service, the meter station factor is a CD weighted average of the LRS and Non-LRS factors.

100% Load Factor Delivery Rate Calculation

Total Field Receipt Contract Demand (CD)	CD
Nova non-LRS Receipts	98,000
Nova LRS Receipts	4,000
Alliance Receipts Adjusted by Authorized Overrun 105%	10,000
NUL Receipts	1,000
AEC Receipts	1,000
Total	114,000
Forecasted Export and Intra-Alberta Delivery Billings	
CD	
Nova Export Rate and CD (non-LRS)	0.150 80,000 12,000
Alliance Export Rate Estimated as Nova Export Rate	0.150 10,000 1,500
Nova LRS1 Estimated as Nova Export Rate	0.150 2,000 300
Nova LRS2 Estimated as Nova Export Rate	0.150 2,000 300
AEC Estimated as Nova Export Rate	0.150 1,000 150
NUL LVE Delivery CD is estimated from receipts outside system	0.050 100 5
NUL System Gas Delivery CD is estimated from receipts outside system	0.060 100 6
Total	0.150 95,200 14,261

100% Load Factor Delivery Rate Calculation = Forecasted Export and Intra-Alberta Delivery Billings divided by Total Receipt Contract Demand

Total Forecasted Export and Intra-Alberta Delivery Billings	14,261
Total Receipt Contract Demand	114,000
100% Load Factor Delivery Rate	0.125

NUL Delivery Rate to be added back to the receipt rate

- the market percentages for NUL field receipts are determined from the previous year
 30% goes to LVEs (5 cent delivery rate) 0.015
 25% goes to NUL's system gas (6 cent delivery rate) 0.015

45% leaves the system and pays a 2 cent exchange fee rate	0.009
Total	0.039

Adjusted IATD Calculation

IATD (January 2000)	0.280
Pipeline Fuel Loss Factor	0.985
Adjusted IATD	0.276

Royalty Trigger Point Factor Calculation

-The purpose of this example to illustrate the workings of the factor model.
 -all numbers are fictional

Royalty Trigger Points	Connected Meter Stations	Meter Station Factor	Meter Station Contract Demand (CD)	(1) Royalty Trigger Point Factor	Examples (see below)	(2) Adjusted IATD	(1-(1))*(2) Gas Reference Price Transportation Adjustment
ABBT1		0.00	0	1.00	(a)	0.276	0.00
ABBT2	3040	0.87	1,000	1.15	(b)	0.276	-0.04
ABBT2	3043	1.17	15,000	1.15	(b)	0.276	-0.04
ABBT3	3044	0.75	10,000	0.75	(c)	0.276	0.07
ABBT4	3044	0.75	10,000	0.75	(c)	0.276	0.07
ABBT5	NUL-5000	1.05	1,000	1.05	(d)	0.276	-0.02
ABGS1		0.00	0	1.00	(a)	0.276	0.00
ABGS2	NUL-5000	1.05	1,000	1.05	(d)	0.276	-0.02
ABGS3	3044	0.75	10,000	0.75	(d)	0.276	0.07
ABGS4	3041	0.94	10,000	0.94	(d)	0.276	0.02
ABGS5	3042	1.14	10,000	1.14	(d)	0.276	-0.04
ABGP1	3044	0.75	10,000	0.85	(b)	0.276	0.04
ABGP1	3055	0.94	10,000	0.85	(b)	0.276	0.04
ABGP2	3065	0.79	20,000	0.79	(c)	0.276	0.06
ABGP3	3065	0.79	20,000	0.79	(c)	0.276	0.06
ABGP4	3045	1.29	10,000	1.29	(d)	0.276	-0.08
ABGP5	NUL-5000	1.05	1,000	1.27	(b)	0.276	-0.07
ABGP5	3045	1.29	10,000	1.27	(b)	0.276	-0.07
ABGP6	099- LRS & Reg	0.58	4,000	0.58	(e)	0.276	0.12
ABGP7	4000-LRS2	0.87	2,000	0.87	(e)	0.276	0.04
ABGP8	Alli-10000	1.29	10,000	1.29	(f)	0.276	-0.08
ABGP8		0.00	0	1.29	(f)	0.276	-0.08
						0.276	0.28
						0.276	0.28

Examples:

- (a) *A royalty trigger point is not connected to a meter station of an included pipeline.*
A factor of one is assigned to the royalty trigger point.
- (b) *A royalty trigger point is connected to two meter stations of an included pipeline.*
The factor for the royalty trigger point is the CD weighted average of the meter station factors.
- (c) *Two royalty trigger points are connected to a single meter station of an included pipeline.*
The factor for the royalty trigger points is the meter station factor.
- (d) *A royalty trigger point is connected to one meter station of an included pipeline.*
The factor for the royalty trigger point is the meter station factor.
- (e) *A royalty trigger point is connected to one meter station of an included pipeline with load retention service rates.*
The factor for the royalty trigger point is the meter station factor.
- (f) *A royalty trigger point is connected to a meter station of an included pipeline and to a meter station of not-included pipeline.*
The factor for the royalty trigger point is the meter station factor of the included pipeline.

Please complete and mail/fax to

Department of Resource Development
Attn: Manager, Gas Royalty Help Desk
Fax # (780) 427-3334

Instructions:

- i) Always complete Part 1
- ii) (a) In Part 2, check the **Not Included Pipeline** box if the AEUB facility is not connected to an included pipeline and complete Effective Production Month or Termination Date (Production Month) fields.

(b) If the **Not Included Pipeline** box is not checked, complete all other fields in Part 2 for facilities that are directly connected to an included pipeline. Included pipelines are:
 - Nova Gas Transmission Ltd.
 - Northwestern Utilities Limited (operating as ATCO Pipelines)
 - ATCO Gas and Pipelines Ltd. Formerly Canadian Western Natural Gas Company Ltd., operating as ATCO pipelines.
 - Westcoast Transmission Company (Alberta) Ltd.
 - AEC Suffield Gas Pipeline Inc.
 - Alliance Pipeline Ltd. Partnership
- iii) To make changes to information already submitted, complete Part 1 and amend only the applicable part(s) of the TC20 and submit.
- iv) The TC 20 must be submitted by the last day of the month following the month of production.

