LETTER NO. L-36-95

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Mr. Alan Fogwill
Senior Economist
Centra Gas British Columbia Inc.
1675 Douglas Street
P.O. Box 3777
Victoria, B.C.
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Dear Mr. Fogwill:

Re: Centra Gas British Columbia Inc.
Fort St. John - Integrated Resource Plan

The Commission has reviewed the 1995 Centra Gas - Fort St. John Integrated Resource Plan ("IRP") and is satisfied that the IRP, as filed, substantially meets the requirements as set out in the BCUC Guidelines. Consequently, the Commission approves the IRP. Please note that approval of the IRP does not constitute pre-approval of the DSM programs discussed within the IRP. A copy of the staff report which discusses the IRP is attached for your information.

Yours truly,

Constance M. Smith
for: Robert J. Pellatt

DWE/ssc
Attch.

CG/Cor/FSJ IRP ltr

Centra Gas British Columbia Inc.
Fort St. John 1995 Integrated Resource Plan ("IRP")
BCUC Staff Evaluation Report

Recommendation

Commission staff have reviewed all aspects of the 1995 IRP against the Commission's 1993 IRP Guidelines and find it to be substantially in accord with them. Accordingly, staff recommend that the 1995 Centra -FSJ IRP be approved.

Background

Centra Gas - Fort St John Division ("Centra-FSJ") serves approximately 7,500 customers in the City of Fort St. John and its surrounding communities. In 1994, approximately 24 percent of volumes were sold to industrial customers, 36 percent to commercial customers and 40 percent to residential customers.

Gas is received at six distinct sources originating from various Westcoast pipeline facilities. The Taylor tap is the main supply point for the service area with the main gas source being downstream of the McMahon plant. A high and intermediate pressure pipeline runs from the purchase point at Taylor to the end of the system in the northwest portion of the service area. The pipeline branches off at a "T" junction in the City of Fort St. John and runs north to the Montney area. The system, which is composed exclusively of pipelines, contains no storage facilities or compressors.

On November 24, 1993 Centra-FSJ filed an application with the Commission for a Certificate of Public Convenience and Necessity ("CPCN") to loop the transmission pipeline from the interconnect with Westcoast Energy Inc. ("Westcoast") in Taylor to a location just beyond Fort St. John district regulating Station No. 2. Uncertainty about several aspects of the looping project convinced the Commission that a public review of the CPCN application was required. This review took place during the course of the Revenue Requirements Application hearing which commenced February 8, 1994.

Based on the evidence presented at the hearing, the Commission found that Centra-FSJ had not adequately assessed the demand growth projections upon which the loop proposal was based. The Commission stated that if the demand growth, particularly peak load growth, was less than forecast, the only other principal justification for the loop was increased capacity to reliably handle current peak requirement. Until other less costly measures to mitigate this concern were reviewed, the Commission stated that it was not convinced that improved reliability of deliveries and reduced threat of winter interruption were sufficient to justify the magnitude of expenditure entailed by the loop proposal.

As a result the CPCN for the looping project was denied and Centra-FSJ was advised to conduct a more complete assessment of options for addressing its concerns about system capacity in the context of its IRP. In particular, the Commission directed Centra-FSJ to provide a completed IRP for its Fort St. John Division by June 30, 1994.

The completed document was filed with the Commission July 11, 1994. Staff reviewed the document against the Commission's February 1993 IRP Guidelines and found that it constituted a significant improvement over the December 31, 1993 filing. Nonetheless, the staff found several serious deficiencies with the 1994 document, particularly with respect to the identification and assessment of potential resources. As a result, the staff recommended that the Commission not accept the IRP as filed but instead require that Centra make the necessary changes and refile.

Centra re-filed the document March 31, 1995. The document indicated that Centra faces a small possibility (0.1%) of being unable to meet its current peak day demand given its current resource portfolio. Further, the problem is expected to worsen as demand grows. Centra identified a number of potential resource portfolio alternatives to the original looping proposal contained in the earlier draft. All portfolios contained a 3.4 km loop and accordingly, the Commission granted a CPCN for its construction earlier this summer.

Guideline 1: Identification of the Objectives of the Plan

The BCUC Guidelines call for the identification of those objectives which the utility wishes to achieve through the selection of resources. The 1995 Centra-FSJ IRP identifies six objectives. In order of priority, as determined by the IRP consultative group, these are:

1. Provide reliable service by minimizing the frequency and length of service outages;

2. Minimize customer bills by minimizing service costs;

3. Provide the opportunity for the company to earn stable returns to the shareholders based on efficient operations;

4. Incorporate environmental and social values in the consideration of demand and supply resources;

5. Minimize demand and supply resource risk; and

6. Expand rural natural gas service.

Five of the six objectives are essentially unchanged from the earlier draft although in some cases they have been reworded slightly to improve clarity. A previous objective - education of the public with respect to conservation, energy efficiency, etc. - has been dropped, reflecting staff comments that this was a strategy rather than an objective. The minimization of risk has been added in line with staff concerns that risk was inadequately addressed in the previous draft.

The IRP continues to state that the expansion of natural gas service where economic is an objective of the IRP. As indicated in the previous staff assessment, staff are concerned that the emphasis is on expansion of the system as a goal in contrast to meeting demand for the services natural gas can provide as efficiently as possible. Meeting this demand may be most economically done in ways other than expansion of the grid. Centra recognizes staff concerns but states that the consultative group felt it was very important to provide as much natural gas distribution service as possible.

Centra is part of the Generic Mains Extension Hearing scheduled for this fall so the issue can be sorted out then. Accordingly, Staff do not believe that the inclusion of this objective is significant enough to cause the Commission to refuse to approve the IRP.

Guideline 2: Development of a Range of Gross (pre-DSM) Demand Forecasts

The BCUC Guidelines encourage the use of end-use forecasting and require the development of more than one forecast in order to reflect uncertainty about the future. Centra Gas has used an end-use approach to develop 15 year forecasts of annual and peak day gas volumes. Annual residential and commercial volumes were forecast using the Intra Sectoral Technology Use Model ("ISTUM") with a base year of 1993 and weather normalized data. Because of the small number of industrial customers, a direct survey was used to forecast this load. Peak day volumes were forecast based on historical data and a formula which translated annual volumes to peak day and peak hour. The exact methodology is detailed in the IRP.

In accord with previous Commission staff suggestions that sensitivity analyses be performed, Centra Gas provided scenarios which varied growth rate and energy price assumptions. The scenarios showed that gas demand was sensitive to the level of growth assumed but not to changes in price.

Initially the growth rates used for residential and commercial demand were based on B.C. Ministry of Finance and Corporate Relations projections; however, they were revised based on information received from the consultative group to reflect the cyclical nature of the Fort St. John area. This led to the assumption of different growth rates for each of the three five year periods contained in the 15 year forecast. For both the high and medium growth case, industrial demand was assumed to be unchanged from current levels. The low growth case assumed the loss of two natural gas fired compressors.

Under all three growth rate scenarios, peak day demand five years out was forecast at 19,500 GJs. This reflects the fact that the assumed growth rate - 2.5 percent - was the same under each scenario. Under the high growth case, peak day demand grew to 21,000 GJs by 2008 and declined to 18,300 GJs under the low growth case. Centra suggested that this implied that the system should be built to insure peak day capacity of 19,500 GJs. If the high growth case developed, increases to system capacity could be undertaken later. If the low growth case developed, the system would not be unduly over built.

In the previous evaluation, staff noted several problems with the demand forecast undertaken by the Utility. Most notably staff were concerned that the Utility had rejected end-use modeling out of hand and had not undertaken sufficient scenario analysis. Both of these items have been corrected. Staff still have some concern that the initial five year growth rate is the same for all three scenarios. However, the assumption is supported by the consultative group. Accordingly, staff accept that the demand forecasts presented meet the requirements of the IRP Guidelines.

Guideline 3: Identification of Supply and Demand Resources

Guideline 4: Characterizing Supply and Demand Resources

Supply Side

As indicated in the Background section of this report, Centra faces a small probability (0.1%) of being unable to meet its current peak day requirements with its existing portfolio of resources. The problem occurs because Westcoast is only required to deliver gas at 500 psi, which results in a peak day capacity of 8,050 GJ. Current peak day demand is 18,500 GJ, which Centra has been able to meet because Westcoast usually delivers at pressures ranging from 750 to 900 psi. However, there is no requirement for them to continue to do so. To date, requests to Westcoast to increase the contract pressure have been unsuccessful although Centra has indicated that it will continue to pursue this request.

Nine supply options have been identified within the IRP. These include the 3.4 km loop discussed earlier, the 3.4 km loop plus an additional 15.7 km loop from either Taylor or Baldonnel, a 60 km pipeline expansion from Wonowon, a compressor station at Taylor, a propane/air system, storage, an LNG plant, or a compressed natural gas plant all at Fort St. John. Each of the resource options is described in terms of technical characteristics, economic characteristics (e.g. capital cost, annual operating costs, annual energy cost), financial impacts (e.g. levelized costs, rate impact) and environmental and social impacts (e.g. land use, project safety, employment). Reliability considerations associated with each option are also discussed. As a result, the supply resources are assessed in terms of the IRP objectives.

The IRP shows that pipeline options are less expensive and have a smaller rate impact than compression, storage, LNG or compressed natural gas. Pipeline options are also described as being more reliable than the other options considered.

Staff are satisfied that Centra has adequately canvassed the supply options available to it.

Demand Side

Centra Gas undertook a review of potential demand resources from which it identified ten as being worth more detailed review. These included four programs aimed at residential consumers, four programs aimed at commercial customers, a commercial and industrial interruptible program and a natural gas vehicle program. Centra noted that the commercial programs are also applicable to industrial customers.

Each of the ten potential programs were analyzed using the four standard financial tests applied to demand resources. Only the residential water heater upgrade, the residential home visit (BC21 PowerSmart), the Commercial and Industrial Interruption and the Natural Gas Vehicles programs passed the Total Resource Cost test ("TRC"). For three of the four programs, the pass was marginal. Three of the four programs also passed the Rate Impact Measure test ("RIM") at a zero percent rebate level. The Commercial and Industrial Interruptions program implicitly contains a 100 percent rebate but still showed a RIM of 3.8.

In addition to the financial tests, all the potential DSM resource options were described in terms of their impact on system reliability, employment impacts and the environment (i.e. CO2 Reduction) and thus were related back to the IRP objectives. As well, information was provided on implementation strategies for each program, possible difficulties, and plans for evaluation and monitoring of the program.

In general, Commission staff found that the identification and characterization of the demand resources met the requirements of the IRP Guidelines and is a significant improvement over the information given in the previous IRP. However, staff continue to have concerns about the $2.35 per GJ levelized avoided cost estimate used in the standard financial tests. First, the avoided cost estimate is based on the system as a whole and not on a customer class basis. As approximately one-quarter of Centra's gas supply is provided to industrial customers who likely have a greater load factor than residential and commercial customers, the avoided cost estimate is likely to be downward biased for residential and commercial customers. Accordingly, DSM programs aimed at these classes may not appear financially desirable when in fact they are. Secondly, the Westcoast portion of the avoided cost is based on tolls rather than incremental costs, on the assumption that the Fort St. John utility is sufficiently small to have no impact on the investment plans of the pipeline transmission company. Although this may be true for any one small LDC, in the aggregate, growth in demand in these companies do affect the investment plans. Accordingly, staff suggest that Centra be asked to make refinements to its avoided cost calculations to address these issues in its next IRP.

Guideline 5: Development of Multiple Integrated Resource Portfolios

Guideline 6: Evaluation and Selection of Resource Portfolios

As indicated above, the Centra system is not able to meet current peak day demand if the Westcoast delivery pressures drops to the contract level of 500 psi from the normal historical level of 750 psi. As a result, Centra has indicated that it needs to enhance its resource portfolio to balance system capacity with peak day demand.

The IRP presents six possible portfolios of incremental resources. Each portfolio reflects a theme developed by the consultative group. These themes are: 1) minimize financial cost, 2) minimize environmental impact, 3) maximize reliability, 4) maximize reliability plus minimize cost, 5) maximize gas supply flexibility and 6) maximize planning flexibility. These themes are related to the IRP objectives. In addition, the IRP examines a status quo option.

Each portfolio was developed to meet peak day demand in five years as opposed to peak day demand in 15 years. Centra stated that this reflected the shorter term nature of the development of natural gas demand and supply options as well as the fact that for some demand forecasts, the results 15 years out were close to or less than the five year target. Accordingly, the IRP states that using the five year target for the portfolio analysis decreases the likelihood of making inappropriate resource acquisition decisions.

Each portfolio was analyzed based on nine attributes. These were 1) contribution to peak day demand capacity, 2) capital cost, 3) annual cost, 4) bill impact, 5) CO2 emissions reduction in 2000, 6) land use impact, 7) safety, 8) employment impact, and 9) reliability plus flexibility. Some of the attributes are measured quantitatively (e.g. bill impact) while others are measured qualitatively (e.g. safety).

Those attributes which were measured qualitatively were assigned values of 1, 2 or 3 to reflect the relative acceptability of impacts. A "3" indicated that the impact was more preferable than a "2". In addition, a weighting factor was applied to attributes to reflect the importance of those attributes in meeting the IRP objectives. Reliability was ranked most important at "4", land use impact was ranked "3", and safety and employment were both ranked "2". The attribute value times the weighting factor resulted in the weighted attribute value. These were summed over the four qualitative attributes to determine the relative rank of each portfolio based solely on the qualitative criteria. Both the attribute values and the weighting values were assigned by the consensus of the consultative group.

To assess the relative attractiveness of each of the various portfolios a table was constructed showing the non-participant bill impact for each portfolio, the CO2 reduction in tonnes, and the summed weighted attributes. Based on the information in this table, the consultative group picked Resource Portfolio 6 (Maximize Planning Flexibility) as the preferred option. It was chosen since the table indicated that it was lower cost than all portfolios except Portfolio 1 (Minimize Financial Costs) and created more employment, reduced more CO2 emissions and increased Centra's planning capabilities. The associated rate impact was only .2% greater than Portfolio 1. The preferred portfolio contains six demand resources, a 3.4 km pipeline loop in Fort St. John (for which a CPCN has been granted) and a 14.5 km pipeline loop from Taylor towards Fort St. John.

Staff have two sources of concern with respect to this analysis. Firstly, staff are concerned that resource selection for the portfolios is limited by the five year horizon. Although we agree that firm commitments should not be made to minimize the risk of inappropriate investment decisions, an indication of what resources may be required in order to meet demand over a period longer than five years would be helpful. Staff suggest that Centra consider a ten year horizon. Secondly, staff are somewhat concerned about the inclusion of a Commercial New Envelope Upgrade Program and a Commercial Existing Heating Upgrade Program in the Resource Portfolio since neither program passed either the TRC or RIM tests. Centra has justified their inclusion on the basis that they are close to passing both tests and they provide Centra with added experience delivering demand resources to the commercial sector. As approval of the IRP does not constitute approval of the DSM programs, and Centra-FSJ has indicated to staff that it will be submitting a formal application for approval of its DSM programs around mid-August, staff do not believe the IRP should be rejected on these grounds. However, Centra should be informed that if it chooses to proceed with these programs without receiving prior approval they will be subject to after the fact prudency review.

Overall, staff are satisfied that the process used by Centra to develop and analyze the resource portfolios meets the requirements of the IRP Guidelines. However, Centra should be advised that in the next IRP, the Commission wishes to see portfolios which cover a ten year period.

Guideline 7: The Action Plan

The Guidelines call for the Utility to outline the actions it intends to take over the next four years to bring the IRP into place. As indicated earlier, Centra plans to contact with Westcoast and attempt to renegotiate the delivery pressure. If successful, a 14.5 km loop would be unnecessary. In the absence of such success, Centra has indicated that it will file an application to construct the 14.5 km loop if the results of the winter pressure surveys conducted after the completion of the 3.4 km loop continue to show it is required. The application is expected by mid-1996.

Centra has also indicated that it will be submitting to the BCUC a revenue decoupling proposal. The proposal will resemble that currently in use by BC Gas but will apply to the whole year rather than the winter months only. Centra states that this expanded revenue decoupling mechanism better meets the objective of eliminating the concern surrounding forecast use per customer in revenue requirements applications.

Guideline 8: Public Input

The IRP Guidelines call for the involvement of the public throughout the development of the IRP but allows individual utilities significant latitude as to how this is to be accomplished. Centra Gas established a consultative group consisting of 15 participants representing local and regional governments, business groups, industry, environmental and union groups, community organizations and First Nations. The Utility recognizes that a weakness of the group was that it did not contain a representative from the agricultural sector.

Prior to commencing the consultations, the group was provided with terms of reference and operating guidelines which defined the scope of the work which the group was asked to undertake. In addition, each member of the group was provided with discussion notes describing the various components of the IRP, e.g. the demand forecast. The consultative group met three times. As a result of the meetings, the Utility identified the objectives of the IRP (see above) as well as a variety of resource portfolios (see

above). Centra has indicated that it reviewed the recommendations of the group and accepted and adopted them all.

Commission staff were kept informed of the consultation process as it occurred and were provided with all documentation given to the group. Commission staff are satisfied that the process followed by Centra meets the requirements for public participation as set out in the Guidelines.

Guideline 9: Regulatory Input

Guideline 10: Government Policy Input

Guideline 11: Regulatory Review

The Guidelines indicate that the BCUC staff should be given opportunities to review and comment during the various phases of preparation of the IRP. As indicated above, Commission staff were kept informed of the progress of the IRP and were able to provide comments as the work progressed.