ORDER NO. 98-104

ENTERED MAR 16 1998

BEFORE THE PUBLIC UTILITY COMMISSION

OF OREGON

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In the Matter of the Investigation into Least-Cost Planning for Resource Acquisition by CASCADE NATURAL GAS CORPORATION.	)))	ORDER

DISPOSITION: PLAN ACKNOWLEDGED WITH MODIFICATIONS

On July 15, 1997, Cascade Natural Gas Corporation (CNG or the company) filed its integrated resource plan (IRP) in accordance with Public Utility Commission of Oregon (Commission) Order No. 89-507. CNG held technical conferences prior to filing its plan. A summary of those activities is contained in Appendix "A." Staff circulated a draft proposed order recommending that the Commission acknowledge CNG's plan with certain modifications, described below, on December 2, 1997. CNG accepted the draft proposed order as presented. Staff's final proposed order was distributed December 19, 1997. At a public meeting on January 20, 1998, the Commission considered and adopted staff's recommended order.

PROVISIONS OF THE PLAN AND COMMENTS

CNG's Least-Cost Plan

CNG's least-cost plan (LCP, IRP or the plan) for Oregon is titled, *1996 Integrated Resource Plan.* The three-volume document was submitted to both the Oregon and Washington commissions. Included in the document is a summary of the company's resource decision making process, its conclusions, and a two-year action plan. Technical appendices and a glossary provide detailed supporting documentation.

CNG's 1996 IRP describes the basic components of the company's planning process. The planning process includes a forecast of its future market demand, assessments of demand-side and supply-side resource options, consideration of planning uncertainties, analysis and

selection of resource options for meeting future needs, and identification of actions required in the next two-year period to carry out the company's resource strategy.

· *Forecast.* CNG's medium growth demand forecast is its best estimate of future core market firm energy resource requirements over the twenty-year planning horizon. The forecast has been constructed using a disaggregated residential demand forecast based on CNG's previously developed econometric model and a new commercial demand econometric forecast model developed for this year's IRP. All forecast results are prepared by town and aggregated into city gate purchase points, by state, and by total system. The company projected low, medium, and high gas consumption scenarios, but believes the medium growth forecast scenario is most likely to occur. Under this scenario, CNG's customers are anticipated to have higher than average growth in the next four years, followed by sixteen years of more moderate growth. Firm core market demand is expected to grow at an annual growth rate of 1.7%. CNG's Two-Year Action Plan includes constructing a new residential demand forecast model with the ability to generate new forecast regression coefficients, as new data becomes available. Also, CNG will examine the load and requirements impacts of residential and small-use commercial customer choice pilot programs.

· *Demand-Side Resources.* CNG's IRP presents an evaluation of its 1993 demand-side management (DSM) Two-Year Action Plan accomplishments. The company continued its successful Low Flow Showerhead program, which ended in September of 1996. During the interim between IRPs, CNG implemented a pilot weatherization program in Pendleton and a high efficiency water heater incentive program. It also conducted an energy survey, produced and distributed a consumer education handbook, and began a cooperative commercial school weatherization program with Idaho power. Also, the company evaluated a residential weatherization program and a horizontal axis washer program. During the next planning cycle, the company will pursue implementing an advanced framing education program. In addition, CNG plans to determine avoidable distribution system enhancement costs through distribution system modeling of selected DSM resources.

· *Supply-Side Resources.* Traditional supply-side options available to gas utilities include storage and flowing gas supplies through interstate pipelines. Flowing gas supplies originate in British Columbia, Alberta, and the US Rocky Mountain areas, and include annual, firm winter peaking and spot gas as available. CNG contracts with Northwest Pipeline Corporation (NPC) for interstate pipeline transportation into the CNG service areas in Washington and northeastern Oregon. CNG assigns some of NPC capacity to its noncore industrial customer base until it becomes needed by core ratepayers. CNG also contracts with Pacific Gas Transmission (PGT) for interstate pipeline transportation into CNG service areas in central Oregon. CNG releases both NPC and PGT pipeline capacity on the secondary market, when the capacity is not fully utilized. Such releases help mitigate the effects of straight fixed variable ratemaking by the Federal Energy Regulatory Commission (FERC) Order 636. Under

CNG's preferred scenario, no additional pipeline capacity resources are required during the 20-year planning period.

· *Planning Uncertainties*. CNG's IRP considered planning uncertainty in developing both its demand requirements forecasts and its integrated resource portfolio strategies by developing a wide range of potential scenarios that reflect uncertainty in various key sectors. In this respect, uncertainty of demand, financial conditions, weather, and environmental costs are reflected in the company's load requirement forecasts and in its resource selection (optimization) process. As a consequence, the company feels the ranges reflected in its scenarios analyses are broad enough to ensure that its forecasts and resource selection strategies are sufficiently robust under a wide range of operating circumstances.

· *Impact on Small Businesses.* The company's IRP discusses how its DSM measures and programs will be provided through the private sector. The IRP states, "DSM services are provided through private contractors and businesses" and that CNG's "participation in DSM activities will have a positive impact on small business . . . ." The company currently utilizes and promotes several small business services including DSM contractors, gas appliance dealers, plumbers, and contractor crews. This addresses the concern expressed in Section 303 of the Energy Policy Act of 1992 of the potential impact that utility integrated resource planning and DSM activities could have on small businesses.

· *Environmental Externality Costs.* Consistent with OPUC Order No. 93-695, CNG's plan includes an analysis to consider the impact of environmental externality costs in planning for future energy resources. The company's analysis includes a range of potential cost impacts that range from $0.066 to $0.250 per therm based on the emission cost adders specified in the OPUC order. This analysis considers the natural gas environmental cost impacts from emitting carbon dioxide and nitric oxides. Total suspended particulates (TSP) were not explicitly considered because the company, along with the Oregon Office of Energy, believes that TSP are either not present or is negligible in natural gas. Nevertheless, CNG's plan analyzed the impacts of these cost adders on its integrated resource selection.

· *Integration Strategies.* CNG's integrated resource portfolio, developed using the company's linear optimization model, indicates one to five year short-term supply contracts are more cost effective than long-term supply contracts. CNG's analysis also shows storage resources and winter peaking resources are more cost effective than long-term pipeline capacity contracts. The model chooses short-term resources over long-term resources beginning in 1997, and continues selecting short-term resources until 2005, beyond which, an increasing percentage of short-term resources is chosen. The model also chooses short-term peaking resources over long-term peaking resources throughout the entire 20-year planning period. In CNG's judgment, it may be advantageous for the company to acquire short-term winter firm and peaking resources for the core market. In addition, storage resources could be added as early as 1997-1998 on the PGT portion of the system and by 2000-2001 on NWP portion of the system. One demand side

resource, a horizontal axis washing machine program, was determined cost effective only with an externality cost adder in place. As a result, CNG does not anticipate adding these demand side resources at this time. However, CNG views "these results [as] preliminary" and "Cascade will be continuing these analyses on an ongoing basis with more supply and demand side resources examined."

Regardless of what CNG's final resource selections may be, CNG will probably need to acquire additional resources to meet core requirements. By the end of the 20-year planning period, CNG's model suggests an optimal portfolio mixture of 1,070,400 therms per day of incremental firm, 886,700 therms per day of incremental peaking, and 1,254,200 therms per day of incremental storage.

· *Two-Year Action Plan.* CNG's Two-Year Action Plan describes the actions the company will take to maximize the efficiency from its integrated resource plan and to achieve the lowest cost resource portfolio of reliable natural gas services and conservation. CNG will focus on five areas: company IRP guidelines, demand forecast, distribution system constraint analysis, demand side resource assessment and acquisition, and modeling. The company will restructure the IRP document to be less complex and more easily understood for CNG's stakeholders. Forecasting tasks include constructing a new residential demand forecast model complete with an analysis of residential and small use commercial customer choice pilot programs. The company will estimate avoidable costs of eliminating constraint areas. Demand side tasks include developing an advanced framing education program, examining new conservation measure technologies, and lowering the administrative cost of the state mandated weatherization program. Modeling tasks include expanding both modeling expertise and analysis, while developing its capability to better model pipeline capacity releases. In addition to these tasks mentioned in CNG's Two-Year Action Plan, Commission staff has recommended and the company has agreed to brief staff on: CNG's corporate strategy regarding competitive markets, safeguards against creating stranded assets, and strategies for minimizing core customer risks of unexpected gas price fluctuations.

Comments of the Parties

The Commission developed extensive comments on CNG's draft integrated resource plan submitted in January 1997, and developed draft recommendations on the company's final IRP, which were distributed to the company on October 31, 1997. No comments were filed by any stakeholders on behalf of CNG's Plan. CNG filed reply comments to staff's draft recommendations on July 31,1997. In addition, Staff received no comments from parties regarding Staff's proposed final recommendation and draft order.

Commission Staff Comments. The company addressed Staff's substantive issues prior to filing its final integrated resource plan submitted in July 1997. Staff makes three additional suggestions for modification to the company's IRP. On October 31, 1997, staff distributed its

recommendation that the Commission acknowledge CNG's IRP if the company makes the modifications discussed below:

1. *Integrated Resource Planning and Restructuring.* The company should add an item to its Two-Year Action Plan which states, "The company will brief staff by mid-summer 1998, on its corporate strategy regarding emerging competitive markets and its relationship to integrated resource planning."

2. *Guarding Against Stranded Assets.* The company should add an item to its Two-Year Action Plan which states, "The company will brief staff by mid-summer 1998, on how the company is structuring its resource acquisition decisions to guard against the creation of stranded asset issues in a changing competitive environment."

3. *Minimizing Core Customer Risk Of Gas Price Fluctuations.* The company should add an item to its Two-Year Action Plan which states, "The company will brief staff by mid-summer 1998, on how it is structuring its gas supply acquisition strategy and decision making process in order to minimize core customer risk of unexpected gas price fluctuations."

Cascade Natural Gas. On November 19, 1997, CNG accepted the recommendations of the Commission staff, as set forth above. (CNG's letter is attached as Appendix B). In its letter, the company stated that its "action plan is designed to provide the necessary information and analyses to further develop IRP mechanisms that will allow Cascade to reliably serve natural gas to its customers at the least cost. . . ." In addition, Cascade's letter describes how its IRP complies with the requirements of Order No. 89-507.

OPINION

Jurisdiction

CNG is a public utility in Oregon, as defined by ORS 757.005, which provides natural gas service to or for the public.

On April 20, 1989, pursuant to its authority under ORS 756.515, the Commission issued Order No. 89-507 in Docket UM 180 adopting least-cost planning for all energy utilities in Oregon.

Requirements for Least-Cost Planning under Order No. 89-507

Order No. 89-507 establishes procedural and substantive requirements for least-cost planning and requires the Commission's acknowledgment of plans that meet the requirements of the order.

Procedural requirements. At a minimum, the least-cost planning process must involve the Commission and public prior to making resource decisions rather than after the fact. *See* Order No. 89-507 at 3.

CNG sought public input during the planning process by informing the general public about its planning process and by conducting technical conferences on the plan. The company's technical advisory group, consisting of representatives from other utilities, regulatory agencies, and the public, provided input on planning assumptions, energy resource options, and future scenarios that influence both the demand for and supply of energy. The company distributed a draft plan for comment before developing and submitting the final plan to the Commission. In addition, the company distributed over 2,600 summaries of the plan to customers who requested them. CNG received 105 reply comments from its Washington customers and 27 from its Oregon customers. Appendix A summarizes these activities.

Substantive requirements. The substantive requirements were also set forth in the Commission order as follows:

1. All resources must be evaluated on a consistent and comparable basis.

2. Uncertainty must be considered.

3. The primary goal must be least cost to the utility and its ratepayers consistent with the long-run public interest.

4. The plan must be consistent with the energy policy of the state of Oregon as expressed in ORS 469.010.

Order No. 89-507 at 7.

Evaluation of Resources. CNG's IRP evaluates both supply- and demand-side resources consistently and comparably over time. Numerous linear programming model runs were completed to evaluate eighteen different resource scenarios for the company's plan. All resources were evaluated under the same criteria, though the characteristics of each resource choice, demand- and supply-side, were varied over realistic ranges to evaluate the effects on resource selection and the ultimate cost to supply CNG's customers' energy needs. Existing and incremental demand- and supply-side resources were included in CNG's optimization model to supply future energy needs in each simulation. In addition, the company has included estimates of potential costs for environmental externalities consistent with Order No. 93-695, issued May 17, 1993, regarding the treatment of external environmental costs. The company also applied the same discount rate to costs for both demand- and supply-side resources. We conclude that CNG complied adequately with this requirement for purposes of this plan.

Uncertainty. CNG's IRP planning approach addressed both uncertainty in demand and uncertainty in resource availability. The company considered uncertainty in demand by developing a range of demand forecasts. Other factors considered by the company to address planning uncertainty include customer price sensitivity, weather variation, the pricing and regulation of pipeline capacity expansions, environmental externalities, changes in financial condition, pricing of alternative fuels, and the effects of changing public policy.

Gas utilities face an additional element of uncertainty in resource availability that electric utilities have not yet faced. A gas utility's primary source of traditional supply is a flowing gas supply that is transported using interstate pipeline capacity. The cost and availability of pipeline capacity, however, is dependent on the actions of third party pipelines, other project sponsors, and regulatory agencies. The actions of these parties represent an element of uncertainty that is difficult to quantify for planning purposes. For example, CNG's IRP describes uncertainty generated by FERC Order No. 636 and how it influenced the company's current resource decisions. We are satisfied that CNG's IRP is sufficiently flexible to allow the company to respond to the uncertainties identified in the planning process.

Primary Goal of Plan Must Be Least Cost. The objective of least-cost planning is to plan for resources that both meet the needs of the utility's customers and minimize total system costs over the long-term. CNG has set forth its integrated resource plan to "provide reliable services to core market firm natural gas customers while minimizing costs." CNG's IRP "[continues] to meet the energy needs of its bundled service core market customer with a package of services that combine adequate gas supplies and cost-effective winter peaking services with long-term pipeline transportation contracts and sufficient distribution system capacity at the lowest possible cost." CNG's IRP also renews "its commitment to further explore and develop [DSM] measures estimated to be cost-effective. . . ." The linear programming optimization model used by the company will aid CNG in minimizing total system cost to serve its customers' energy needs over the long run. We are satisfied that CNG has met this requirement for purposes of this integrated resource plan.

Consistency with Oregon's Energy Policy. The Legislature mandated certain energy-related goals in ORS 469.010. These goals relate primarily to the development of sustainable energy resources. CNG's plan is consistent with these goals. CNG has included conservation resources in its resource acquisition plan. In addition, the company has indicated it will continue to assess the potential for additional residential and commercial/industrial DSM programs.

Commission Decisions on Parties' Comments

Staff's final recommendation document contained three specific recommendations related to CNG's future planning process. CNG has agreed to the recommendations in Staff's

memo. The Commission believes that the recommendations and compliance dates proposed by Staff, and agreed to by the company are reasonable. We adopt the recommendations.

Conclusion

Based on review of CNG's planning efforts and the company's November 19, 1997, agreement to the recommended modifications included in this order, CNG's 1996 Integrated Resource Plan is acknowledged. CNG's IRP meets the minimum substantive and procedural requirements of Order No. 89-507. Achievement of the objectives in the company's 1997-1998 Action Plan and the Commission recommendations will enhance the company's efforts in the development of future integrated resource plans and assist the company in minimizing its total system costs over the twenty-year planning horizon.

EFFECT OF THE PLAN ON FUTURE RATE-MAKING ACTIONS

Order No. 89-507 sets forth the Commission's role in reviewing and acknowledging a utility's least-cost plan, as follows:

> The establishment of least-cost planning in Oregon is not intended to alter the basic roles of the Commission and the utility in the regulatory process. The Commission does not intend to usurp the role of utility decision-maker. Utility management will retain full responsibility for making decisions and for accepting the consequences of the decisions. Thus, the utilities will retain their autonomy while having the benefit of the information and opinion contributed by the public and the Commission.
>
> *****
>
> Plans submitted by utilities will be reviewed by the Commission for adherence to the principles enunciated in this order and any supplemental orders. If further work on a plan is needed, the Commission will return it to the utility with comments. This process should eventually lead to acknowledgment of the plan.
>
> Acknowledgment of a plan means only that the plan seems reasonable to the Commission at the time the acknowledgment is given. As is noted elsewhere in this order, favorable rate-making treatment is not guaranteed by acknowledgment of a plan.
>
> Order No. 89-507 at 6 and 11.

This order does not constitute a determination on the rate-making treatment of any resource acquisitions or other expenditures undertaken pursuant to CNG's 1996 IRP. As a legal matter, the Commission must reserve judgment on all rate-making issues. Notwithstanding these

legal requirements, we consider the integrated resource planning process to complement the rate-making process. In rate-making proceedings in which the reasonableness of resource acquisitions is considered, the Commission will give considerable weight to utility actions which are consistent with acknowledged integrated resource plans. Utilities will also be expected to pursue unanticipated least-cost opportunities beneficial to ratepayers which arise after Commission acknowledgment or, alternatively, explain why such opportunities were not pursued.

CONCLUSIONS

1. CNG is a public utility subject to the jurisdiction of the Commission.

2. CNG's 1996 Integrated Resource Plan, with the modifications adopted herein, reasonably adheres to the principles for least-cost planning set forth in Order No. 89-507. The plan will assist in ensuring that CNG's customers receive adequate service at fair and reasonable rates and is otherwise in the public interest.

ORDER

IT IS ORDERED that the 1996 Integrated Resource Plan filed by Cascade Natural Gas Corporation, dated July 15, 1997, as modified herein, is acknowledged in accordance with the terms of this order and Order No. 89-507.

Made, entered, and effective MAR 16 1998.

Ron Eachus
Chairman

Roger Hamilton
Commissioner

PUBLIC UTILITY COMMISSION OF OREGON

Joan H. Smith
Commissioner

APPENDIX A

CASCADE NATURAL GAS CORPORATION

First Technical Advisory Group – Demand Forecast
Monday – September 25, 1995

Introduction of Participants

Overview of Cascade's Integrated Resource Plan Process
- Objectives
- Components

Demand Forecast History
- Service Territory
- WSEO Residential Model Structure Overview

Commercial and Industrial Core Forecast
- Data and Sources
- Review of Model

Demand Forecast Overview
- Data and Sources
- Review of Results
- Conclusions

Closing Discussion
- Future Meetings
- Other Comments

CASCADE NATURAL GAS CORPORATION

Second Technical Advisory Group
Demand Side Management Activities
Monday – October 30, 1995

Introduction of Participants

Overview of Cascade's DSM Process
- Objectives
- Risks

DSM Accomplishments in 1994/1995
- Low Flow Shower Head Program
- Pendleton Pilot Weatherization Program
- Oregon Mandated Program
- Customer Service Booklet
- Commercial & Residential Questionnaires
- School Audit and Weatherization Program with IPCo

Future DSM Plan Possibilities
- Residential
  - Thermostats
  - Marketing Techniques for Oregon State Mandated Program
  - Cost Recovery Mechanism for Washington
  - Budgeted Conservation Program in Washington
    - Low Income Weatherization by Priority
    - Pilot Program
    - Commercial/School Program
  - Commercial/Industrial
    - Analysis by SIC

Closing Discussion
- Future Meetings
- Other Comments

I. Sendout Modeling Topics for December 11, 1995

II. Linear Programming Problem Definition

A. Objective Function

1. Minimization of system costs or maximization of resource benefit
2. Use of Simplex method or some variant thereof

B. System of Constraints or the Tableau

1. How constructed? Matrix Generator? Multiple Arrays?
2. Form of equations, number of equations
3. Redundant constraints? Other problematic constraints?

III. Input Data - How Does the Model Treat?

A. Planning Assumptions

1. Time periods
2. Climatological
3. Summer/winter gas price differential
4. Load curves (various scenarios of growth)
5. Other staff questions

B. Characterization of Input Resources

1. CD
2. Storage
3. Release capacity/call-backs
4. Spot purchases

5. DSM (equal treatment between supply and demand-side resources in the system of constraints?)

6. Gas prices

7. Financial assumptions

8. Resource-specific infrastructure enhancements

C. *Data Handling Capability*

1. Use of scalars or multipliers

2. Easy to change constraint/variable values

3. Multiple data sets for multiple scenarios

IV. Outputs

A. *Types of Reports*

1. Numerous types with ability to combine and merge various subreports

2. Graphical representation of feasible space?

V. Modeling Problems

A. *Counter Intuitive Results*

B. *Resource Bias*

C. *Timing Issues*

D. *Resource Mix Issues*

1. Lumpiness

2. DSM levels

E. Treatment of Variable and Fixed Costs

1. Does it optimize fixed-cost additions or merely optimize variable costs?

VI. Special Topics

A. Actual portfolio represented in model input format

B. Supply/price risk assessment: How does the model provide tools for study?

C. Capacity release techniques: Does it just flag release potential or execute user strategies?

D. Multitier pricing: Contract terms level of complexity

E. Actual case studies using model: Example of Cascade's use in a small project such as contract negotiation or capacity release

F. How DSM overhead is modeled (parameter, melded, etc.) and discussion of results

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CASCADE NATURAL GAS CORPORATION

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FACSIMILE (206) 624-7215

November 17, 1997

Oregon Public Utility Commission
550 Capitol Street NE
Salem, OR 97310-1380

Attention: Ms. Janice Fulker
Administrator, Tariffs and Rate Analysis

Cascade Natural Gas Corporation filed its 1996 Integrated Resource Plan under OPUC Order 89-507 on July 15, 1997. The Company believes this filing meets the procedural and substantive requirements of the Order. The four main IRP requirements include evaluating resources on a consistent and comparable basis, consideration of uncertainty, provide natural gas service at the least cost with an acceptable level of reliability, and consistency with the energy policy expressed in ORS 469.010.

Cascade evaluated available resources on a consistent and comparable basis through the use of its linear programming optimization model. Demand side and supply side resources have the same input and operating constraint criteria for the optimization model to evaluate the present value cost and energy utilization over the planning horizon. Additionally, environmental externalities were evaluated by adding the cost per therm equivalent of the externality cost values to supply side resources as described in OPUC Order No. 93-965.

The Company considered uncertainty within its IRP by utilizing various demand forecast scenarios, design and average weather conditions, different financial conditions, various gas and electric prices, environmental externality costs, and the reliability of resource deliverability. These uncertainty considerations are conducted through a series of scenario analyses that evaluate the impact of various range estimates of each uncertainty condition.

Cascade selected a resource portfolio that is projected to provide natural gas service to Cascade customers at the least cost with an appropriate level of reliability and in the long term interest of the Company's customers. Demand requirements were established through the demand forecast model. Existing and incremental demand side and supply side resources were identified and the optimization model was used to compute the present value of each resource portfolio's cost.

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The IRP is generally consistent with the energy policy in ORS 469.010, which establishes goals to develop sustainable energy resources. The Company believes that the supply and demand-side resources in the plan provide economic and environmental benefits to the citizens of Oregon. The Company will continue to evaluate the potential for residential, commercial, and firm industrial DSM programs.

Cascade's 1996 IRP Two Year Action Plan is designed to accomplish several goals that will lead toward Cascade refining its IRP capabilities. The action plan is designed to provide the necessary information and analyses to further develop IRP mechanisms that will allow Cascade to reliably serve natural gas to its customers at the least cost while providing an acceptable rate of return to shareholders. These IRP mechanisms need to continually incorporate flexibility to function in a dynamic and uncertain energy marketplace.

Cascade agrees to undertake the three OPUC Staff recommendations as a modification to its two-year action plan. Specifically, Cascade agrees to do the following:

1. The Company will brief Staff by mid-summer 1998 on its corporate strategy regarding emerging competitive markets and its relationship to integrated resource planning.

2. The Company will brief Staff by mid-summer 1998 on how the company is structuring its resource acquisition decisions to guard against the creation of stranded asset issues in a changing competitive environment

3. The Company will brief staff by mid-summer 1998 on how it is structuring its gas supply acquisition strategy and decision making process in order to minimize core customer risk of unexpected gas price fluctuations.

Cascade would like to thank those who actively participated in its 1996 IRP process. The meetings with and comments from the OPUC staff have greatly contributed to Cascade's IRP development to date.

Very truly yours,

Jon T. Stoltz
Sr. Vice President – Planning & Rates

JTS:dlp