

MANITOBA ) Order No. 72/06  
)  
THE PUBLIC UTILITIES BOARD ACT ) May 15, 2006

Before: Graham F.J. Lane, B.A., C.A, Chairman  
Monica Girouard, CGA, Member  
Mario J. Santos, B.A., L.L.B., Member

CENTRA GAS MANITOBA INC. APPLICATION FOR  
A FINAL ORDER OF THE BOARD:

1. APPROVING AND AUTHORIZING FRANCHISE AGREEMENTS BETWEEN CENTRA AND THE TOWN OF SHOAL LAKE AND CENTRA AND THE RURAL MUNICIPALITY OF SHOAL LAKE; and
  2. APPROVING THE FINANCIAL FEASIBILITY TEST FOR THE EXPANSION OF NATURAL GAS TO PROVIDE SERVICE TO CUSTOMERS WITHIN THE PROPOSED FRANCHISE AREAS.
-

**TABLE OF CONTENTS**

|  | <b>Page</b> |
|--|-------------|
| <b>1.0 EXECUTIVE SUMMARY .....</b>                                   | <b>3</b>    |
| <b>2.0 APPLICATION.....</b>  | <b>5</b>    |
| <b>3.0 INTRODUCTION.....</b>   | <b>5</b>    |
| <b>4.0 EXPANSION AREA AND FRANCHISE AGREEMENTS .....</b>             | <b>7</b>    |
| <b>5.0 CUSTOMER ATTACHMENTS, FORECAST VOLUMES AND REVENUES .....</b> | <b>8</b>    |
| <b>6.0 SYSTEM DESIGN AND CAPITAL COST .....</b>                      | <b>10</b>   |
| <b>7.0 FEASIBILITY TEST METHODOLOGY AND RESULTS .....</b>            | <b>12</b>   |
| <b>8.0 FUNDING AND AGREEMENTS .....</b>                              | <b>13</b>   |
| <b>9.0 BOARD FINDINGS.....</b>                                       | <b>14</b>   |
| <b>10.0 IT IS THEREFORE ORDERED THAT.....</b>                        | <b>18</b>   |

**APPENDIX "A"**

**APPENDIX "B"**

## **1.0 EXECUTIVE SUMMARY**

Centra Gas Manitoba Inc. (Centra) filed application with The Public Utilities Board (Board) on December 15, 2005 to approve an expansion of its natural gas service into the Town and Rural Municipality of Shoal Lake. Such approval would consist of approval of a franchise agreement between the Town of Shoal Lake (Town), the Rural Municipality of Shoal Lake (RM) and Centra, as well as approval of the financial feasibility test for the expansion.

The proposed expansion is to serve primarily commercial customers that are currently using either propane or oil for space heat within the Town and the RM. As well, capacity is included for identified residential customers using propane or oil and located adjacent to the proposed systems. The feasibility test includes 29 commercial and 12 residential customers.

Integral to the financial viability of the project was a request by Centra to approve the use of piping and fittings for the high pressure distribution main from Hamiota to Shoal Lake using polyethylene material 114.3 mm SDR 11 PE 100 (PE 100). This material is currently not approved by the Canadian Standards Association, normally a requirement for the installation of natural gas pipeline in Manitoba.

Centra advanced its proposal based on the rationale that the International Standards Organization (ISO) allows for the use of the material. Use of PE 100 is projected to realize

a savings of approximately \$200,000 on the project, an essential ingredient to the financial feasibility.

On February 23, 2006, Centra made a separate application for Board approval of the use of PE 100 pipe for this project.

Using the estimated consumption based on the 29 commercial and 12 residential customers, the use of PE 100 pipe, other costs and revenue in accordance with feasibility test criteria approved by the Board, the required customer contribution is \$1,494,116, while the capital cost is estimated to be \$1,305,231.

The contribution exceeds capital costs because the combination of the net present value (NPV) of future operating costs and the initial capital costs exceed the NPV of the future revenues. However, the feasibility test results satisfy the Board requirements, and no undue impact is projected to impact on the system's other customers.

Funding of the project's capital costs is to come from third parties, namely the Federal Government, the Provincial Government of Manitoba and debenture funding from both the RM and the Town. Total available funding through these sources for capital purposes is \$1.6 million. The estimated contributions required for project feasibility were \$1.5 million, including the assumed use of PE 100.

Given that Centra requested an exception to an existing standard, the Board's engineering advisors did extensive technical research related to the use of the PE 100 product.

In this Order, the Board will approve the new franchise agreements with caveats as described in the Order and will approve the use of PE 100 with a number of conditions as described in the Section 5 of this Order

## **2.0 APPLICATION**

On December 15, 2005 Centra applied, on its own behalf and on behalf of the Town and the RM, to the Board for

- a) final approval and authorization of franchise agreements between Centra and the Town and Centra and the RM, and
- b) final approval of the financial feasibility test for expansion of Centra's distribution system to serve commercial and residential customers within the proposed franchise areas.

## **3.0 INTRODUCTION**

Several years ago, the councils of the RM, six neighbouring municipalities and the Waywayseecappo First Nation formed the West Central Gas Committee ("WCGC") to investigate the possibility of bringing natural gas service to these areas. Centra assisted the WCGC in developing alternative scenarios to expand natural gas service, but ultimately senior government funding could not be obtained, and the WCGC was dissolved in March, 2004.

Subsequently, the Shoal Lake Regional Community Development Corporation ("CDC") requested Centra to provide estimated costs necessary to extent natural gas service. The expansion focused on existing commercial customers using propane or oil as their energy source within the Town and the RM. Additionally, residences using propane or oil and located within a reasonable distance of the proposed commercial distribution system were considered as potential customers, within an area referred to as the Shoal Lake Limited Commercial Scope. The system design and cost estimates incorporated the above parameters.

CDC was of the view that conversion to natural gas from either propane or oil would result in immediate beneficial savings to the customers, contribute to stabilizing the local economy and encourage future business development, likely attracting value-added agri-processing business. Thus a feature of the system design required by CDC was built in capacity, excess to the requirements of the Shoal Lake Limited Commercial Area, to accommodate expansion opportunities and to attract future commercial customers.

In accordance with Board direction, Centra published a notice of Application and Hearing in the local newspaper, *the Crossroads This Week*. Further the Application was served on the interested parties previously known to have interest in this area.

None of the interested parties filed application to become interveners in these proceedings and no information requests

were submitted on their behalf. The Board received a letter in support of this Application from CDC.

As there were no registered interveners, the Board proceeded by way of a paper hearing process to review the application, thereby minimizing regulatory costs.

#### **4.0 EXPANSION AREA AND FRANCHISE AGREEMENTS**

The Town gave first reading to By-law 6-2005 granting Centra the required franchise to include the entire incorporated village area on April 12, 2005. The RM gave first reading to By-law 2-2005 on April 13, 2005, granting Centra the required franchise to include sections located directly on either side of the proposed feeder main and sections adjacent to the Town.

The franchise areas in the RM are comprised of:

- Sections 4, 5, 8, 9, 16, 17, 20, 21, 28, 29, 32, and 33 Township 16, Range 23 WPM.
- Sections 3, 4, 5, 6, 7, 8, 10, 15, 16, 17, and 18, Township 16, Range 23 WPM.

Additionally, Centra requires a crossing agreement with the Rural Municipality of Hamiota. Hamiota gave first reading to the by-law authorizing and granting the necessary crossing agreement on April 13, 2005. Second and third reading of the franchise by-laws and the crossing agreement by-law will be completed upon Board approval of the project.

The proposed franchise area is shown in Appendix "A", attached to this Order.

## **5.0 CUSTOMER ATTACHMENTS, FORECAST VOLUMES AND FORECAST REVENUES**

### a) Customer Attachments

Centra's customer attachment estimates were conducted in accordance with the focus and objectives for the expansion project adopted by the CDC. Thus, Centra considered only existing commercial customers that are using either propane or oil as their primary energy source, and residential customers also using propane or oil and located within a reasonable distance of the distribution system to potentially convert to natural gas.

A customer survey conducted by Centra in January 2005 indicated that there were 29 potential commercial and 12 residential customers.

Centra stated:

- a) that customer attachment rates are specific to this project and conservative; and
- b) readily attainable targets.

Centra assumed attachment rates of 55% (commercial) and 50% (residential), by year 5 of the project.



c) Forecast Volumes

Centra estimated annual volumes for the 29 potential commercial customers using the equipment-input method. This method estimates consumptions based on existing customer equipment sizes and efficiencies. Existing electrical loads were not considered in estimating commercial volumes. The estimated potential annual commercial volume is 406,000 m<sup>3</sup>, and the annual commercial volume for year 5 is approximately 277,000 m<sup>3</sup>.

Centra used its estimated system average residential consumption of 2,830 m<sup>3</sup> to project annual residential volumes. This approach is consistent with residential load assumptions used in other recent expansion projects. The estimated potential annual residential volume is 34,000 m<sup>3</sup>, and the annual residential volume for year 5 is approximately 17,000 m<sup>3</sup>. No additional customers or volumes were assumed after year 5, a conservative approach in Centra's view.

d) Forecast Revenues

Centra applied the November 1, 2005 Small General Service (SGS) and Large General Service (LGS) Base Rates as approved by the Board in Order 148/05, dated November 3, 2005 to the estimated volumes to project and input annual revenues into the feasibility test for the 30 year period.

## 6.0 SYSTEM DESIGN AND CAPITAL COSTS

The proposed feeder main will tie-in to the existing Hamiota Town Border Station (TBS) and will involve the installation of 28.3 km of PE 100 to a new Shoal Lake TBS installed along PTH #21. Centra acknowledges that the use of PE 100 pipe is not currently approved by CSA Standard Z662-03 Oil and Gas Pipeline system.

Centra requested approval for use of the PE 100 material and provided the Board with additional information in support of this request. Centra advised that CSA is currently considering the inclusion of PE 100 in its standards, though the product has not been used extensively in other jurisdictions.

The Alberta Energy and Utilities Board (AEUB) has issued a directive that conditionally accepts the use of PE 100 material, with terms and conditions for its use and operating environment. The product has been reported to be in extensive use in Europe and the United States.

Centra estimates that the use of PE 100 will result in savings of approximately \$200,000 over conventional pipe and that this saving is essential to the success of this project. The feeder main has been sized to accommodate the identified potential customers within the Limited Commercial Scope plus a 10% allowance for excess capacity.

The feeder main is designed to operate at a delivery pressure of 1,105 kPa and a minimum system pressure of 560

kPa and will terminate in a regulator station, reducing transmission pressure to distribution pressure.

The distribution system will be installed primarily within existing road allowance and will consist of approximately 4.2 km of 114.3 mm and 4.5 km of 60.3 mm polyethylene pipe. The distribution system is designed to operate at 420 kPa with a minimum end pressure of 140 kPa. Installation will be accomplished by a number of construction techniques based on local conditions.

This proposed natural gas expansion project is classified as a Class 2 development under Section III of The Manitoba Environment Act (Manitoba Regulation 164/88) Class 2 developments greater than 10 km in length typically require the proponent to prepare or submit a proposal in writing to Manitoba Conservation to obtain a license and approval from the Director. Centra has applied for and received a approval for this project from the Director of Manitoba Centra has also received an environmental screening report from the Canadian Environmental Assessment Agency allowing the project to proceed.

The estimated 10 year capital cost for this project is \$1,305,231. The capital cost estimate was prepared using the following inputs and assumptions:

- projected capital costs in 2006 Canadian dollars and includes general freight;
- the use of PE 100 pipe will be approved by the Board,

- 5% Contingency applied to contractor labour and materials reflecting the lower degree of relative project complexity;
- 1% Interest during construction applied to contractor labour and materials;
- 18% overhead applied to contractor labour and materials; this consists of 7.5% Engineering, 2.5% Construction, 4% Project Administration, 1% Overhead Contingencies and 3% Marketing

#### **7.0 FEASIBILITY TEST METHODOLOGY AND RESULTS**

Centra determined that the project is feasible in that it passes the 30-Year NPV test with an NPV of \$1 and achieves a revenue to cost ratio of at least 1.0 by the end of the fifth year, as required by the Board. Based on total capital costs of \$1,305,231 and the assumptions in the feasibility test, the total contribution required is \$1,494,116.

The contribution exceeds the capital costs because the NPV of the future operating costs, when added to the necessary capital costs exceed the NPV of the future revenues.

The feasibility test was completed using the following assumptions:

- sales rates and the appropriate Weighted Average Cost of Gas for each Large General Service Commercial and Small General Service Commercial customer as approved in Order 148/05;

- a depreciation rate of 2.09% based on Centra's weighted average depreciation rate for the required transmission and distribution plant;
- municipality property tax based on 2005 mill rates and 2002 assessment rates;
- corporate capital tax calculated at the rate of 0.5% of net plant, before any contributions received by Centra;
- NPV of the revenue deficiency discounted at the weighted average cost of capital of 7.69%; and
- Centra's capital structure and cost of capital of 8.10% as approved in Order 118/03.

A true-up will be completed at the end of five years, effective December 31, 2011, in accordance with the funding agreement to determine if a refund is payable to each of the customers.

## **8.0 FUNDING AND AGREEMENTS**

CDC will provide funding for the expansion through investments from senior level of government through the Canada-Manitoba Economic Partnership Agreement (EPA), and from the Town and the RM. The feasibility test result indicates a required project contribution of \$1.494 million. Under the arrangements, the EPA will contribute up to two thirds of the maximum project cost limit of \$1.6 million, with the Town and the RM contributing the remainder through local debentures.

Centra will not be required to provide any capital funding contribution, and has received a deposit of \$100,000 from CDC.

## **9.0 BOARD FINDINGS**

The Board notes that the application was filed in a manner consistent with the Board's requirement to have system extension applications supported by prior Board approved feasibility tests. The results flowing from the feasibility test indicate that the revenue to cost ratio in year five of the project is 1.000 if customer contribution of \$1,494,116 is received, which satisfy the required NPV test criteria.

The Board has reviewed the financial feasibility study presented by Centra and notes that the financial viability of the project is conditional upon major funding contributions from third parties.

The Board notes that the project is strongly supported by the CDC and concludes that the project is only viable as an economic development initiative for the community. In other words, without the financial contribution of some \$1.6 million from the two levels of government and from the Town and RM, the project would not be financially feasible for Centra. Nonetheless, governments at all three levels have concluded that their investment is appropriate. Given their contribution, and the projected revenues and expenses of the expansion over a 30 year period, the installation will not create a financial imposition on other customers of Centra.

The Board notes that the system has been designed to serve only a limited number of customers, those being:

- a) those commercial customers and a limited number of adjacent residential customers using either propane or oil; and
- b) some excess pipeline capacity for future growth limited by the Board's condition that the maximum operating pressure (MOP) be calculated using minimum required strength (MRS).

Given the current market prices of natural gas and future uncertainties surrounding the market, the Board considers the approach taken by Centra to be prudent and reasonable. The Board will also require Centra to provide a "true-up" report by December 31, 2011 in respect of this expansion, as stipulated in the funding agreement.

The Board has reviewed the system designs, as well as the feasibility test cost and revenue inputs and is satisfied that the Board's expansion criteria have been properly met. The Board notes that Centra's capital cost estimates reflect 2005 material prices. Labour cost estimates use 2005 labour rates, with a 3% allowance for inflation, and considers the costs to be reasonable for purposes of the feasibility test.

Further, the Board notes that the financial viability is contingent on the use of piping material not currently sanctioned in Manitoba, namely PE 100.

Board Order No. 14/04 issued February 3, 2004 stated:

"Effective January 1, 2004 the minimum standard of design, installation, testing, operation and maintenance of gas pipelines in Manitoba shall be the CSA standard Z662-03 Oil and Gas Pipeline Systems."

PE 100 does not meet this requirement. Understanding the use of the product contributes to the financial viability of the project, the Board's overriding concern is safety, and that is what the CSA standard addresses.

Given that the PE 100 product is not currently approved by CSA and thus does not conform with Board Order 14/04, the Board, through its Advisors, asked extensive questions of Centra related to the product. The Board also directed its advisors to study the proposed use of the product in Manitoba from a safety perspective.

The PE 100 application by Centra contained minimal details and findings on the current status of material approvals, research, manufacturing quality control and assurance, overall use in gas distribution systems integrity and field operation experience related to PE 100.

Consequently, the Board's engineering advisors, Energy Consultants International (ECI), conducted an extensive examination of the technical details of PE 100 and the applicable ISO standards. In addition ECI interviewed resin manufacturers, fitting manufacturers, several regulatory authorities, CSA program administrators, gas distribution utilities and polyethylene piping production facilities.



The Board will require that Centra utilize the MRS formula to design the Shoal Lake Project. On this basis, the Board is now satisfied that the use of PE 100 will not compromise safety and is prepared to vary Order 14/04 and approve the use of PE 100 for the Shoal Lake Expansion Project conditional upon 15 requirements, referenced as conditions in Section 10 of this order.

The Board notes that it has approved non-CSA approved material in the past. Specifically this occurred with the Board's acceptance of the use of PE electrofusion fittings, by Board Order 111/88. Further, the Board has approved new piping material for use in Manitoba in the past, though only after extensive review and analysis by its engineering and technical advisors.

Other matters taken into consideration were:

- The CSA B137 Series Technical Committee began the balloting process to accept PE 100 on February 24, 2006. This first ballot closed on March 27, 2006. The committee will be meeting again on May 17, 2006 to discuss the disposition and resolution of any negative ballots.
- Centra would be the first gas distribution utility in Canada to install and operate a PE 100 piping system. The AEUB has issued a directive, which approves on a case by case basis the use of bimodal high density PE for gas gathering, including PE 100. So far, the AEUB has approved the operation of one gas gathering (upstream) application for the use of PE 100.

- During initial testing by Centra, staff found it difficult to squeeze PE 100 using the traditional manual PE squeezing equipment. PE hydraulic squeezers would be needed for emergency response staff to facilitate safe conditions in the event of an emergency.

**10.0 IT IS THEREFORE ORDERED THAT:**

1. The franchise agreements between Centra and the Town of Shoal Lake and the Rural Municipality of Shoal Lake BE AND ARE HEREBY APPROVED. This for the service area including the entire Town of Shoal Lake and an area along PTH No. 21 that is within the Rural Municipality, as shown on Appendix "A".
2. The feasibility test as submitted by Centra Gas Manitoba Inc., and attached as Appendix "B" to this Order, BE AND IS HEREBY APPROVED, on an ex-parte basis
3. Centra submit a "true-up" report to the Board respecting this application by no later than December 31, 2011.
4. Board Order 14/04 IS HEREBY VARIED and the use of 114.3 mm SDR 11 PE 100 material for the pipe and fittings in the Shoal Lake expansion project BE

AND IS HEREBY APPROVED based on the following conditions:

- Centra must notify the Board of any negative ballots, before and after installation, that arise at any point in time during the CSA approval process of PE 100. Centra must explain, to the Board's satisfaction, the rationale for the negative ballots and Centra's plans to address these.
- Centra will use the MRS method of calculating the MOP for the proposed PE 100 feeder main for Shoal Lake.
- Centra will provide a comparison of Centra's proposed installation standards and procedures to ISO installation standards and procedures for PE 100. If any conflicts exist, Centra shall address these conflicts to the Board's satisfaction.
- Centra will provide the Board with a copy of its purchasing material specifications for the PE 100 piping and fittings.
- A third party other than the manufacturer must perform a formal inspection audit of the PE 100 piping manufacturing process to verify adherence to the in-plant quality assurance program and piping quality.
- Centra must provide the Board with Certified Test Results performed by the resin manufacturer and verification that the resin

compound was manufactured to the most appropriate standard for each batch.

- Centra must provide the Board with copies of the Certificates of Compliance and Testing, or equivalent, performed by both the piping and fitting manufacturers including the results from the applicable sampling and testing requirements of CSA B137.4 Polyethylene Piping Systems for Gas Services.
- Centra must perform fusion tests, prior to those required during installation, of the PE 100 fittings produced from the same batch of resin and production runs that will be used for the Shoal Lake Expansion project to verify quality. Centra will use an established standard or testing procedure to conduct these tests.
- ECI shall verify, prior to installation, that the specific materials used in the installation of the polyethylene pipeline complies with all applicable codes and standards and is suitable for its intended purpose.
- Centra shall ensure that first responders to a leak call in the area of the installation of PE 100 pipe be equipped with hydraulic squeezers.
- Centra shall notify the Board of all PE 100 fitting and fusion testing performed by Centra prior to and during installation

together with the qualification of its personnel installing the PE 100 pipe and fittings.

- Centra will conduct destructive or non-destructive testing of pipe joints at regular intervals throughout the installation. The frequency of testing should mirror, at minimum, the required field testing outlined by the AEUB in their Directive 022.
- ECI will be onsite to conduct spot inspections of construction during the installation process, including the observations of any joining processes performed in the course of installation.
- ECI will be onsite during the final leak testing procedure, to witness the completion of successful stand-up pressure tests.
- Centra will provide the Board with a full set of installation standards and procedures applicable to PE 100 for the Shoal Lake project. This shall include all pre-construction testing procedures of the PE 100 piping and fitting material.









Financial Feasibility Test

|  | 2017        | 2018        | 2019        | 2020        | 2021        | 2022        | 2023        | 2024        | 2025        | 2026        |
|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
|  | YEAR_11     | YEAR_12     | YEAR_13     | YEAR_14     | YEAR_15     | YEAR_16     | YEAR_17     | YEAR_18     | YEAR_19     | YEAR_20     |
| <b>1 Shoal Lake Expansion Project</b>    |             |             |             |             |             |             |             |             |             |             |
| <b>OPERATING ASSUMPTIONS</b>             |             |             |             |             |             |             |             |             |             |             |
| 5  | 22          | 22          | 22          | 22          | 22          | 22          | 22          | 22          | 22          | 22          |
| 6  | 10,435      | 10,435      | 10,435      | 10,435      | 10,435      | 10,435      | 10,435      | 10,435      | 10,435      | 10,435      |
| 7  | 296         | 296         | 296         | 296         | 296         | 296         | 296         | 296         | 296         | 296         |
| 8  | \$139,768   | \$139,768   | \$139,768   | \$139,768   | \$139,768   | \$139,768   | \$139,768   | \$139,768   | \$139,768   | \$139,768   |
| <b>9 RATE BASE</b>                       |             |             |             |             |             |             |             |             |             |             |
| 10                                       | \$1,305,231 | \$1,305,231 | \$1,305,231 | \$1,305,231 | \$1,305,231 | \$1,305,231 | \$1,305,231 | \$1,305,231 | \$1,305,231 | \$1,305,231 |
| 11                                       | \$297,871   | \$325,077   | \$352,284   | \$379,490   | \$406,697   | \$433,903   | \$461,110   | \$488,317   | \$515,523   | \$542,730   |
| 12                                       | \$1,150,619 | \$1,119,392 | \$1,088,165 | \$1,056,937 | \$1,025,710 | \$994,483   | \$963,256   | \$932,029   | \$900,802   | \$869,575   |
| 13                                       | \$6,797     | \$6,791     | \$6,785     | \$6,779     | \$6,773     | \$6,767     | \$6,761     | \$6,754     | \$6,748     | \$6,742     |
| 14                                       | (\$138,472) | (\$134,457) | (\$130,443) | (\$126,429) | (\$122,414) | (\$118,400) | (\$114,385) | (\$110,371) | (\$106,357) | (\$102,342) |
| <b>15 REVENUE DEFICIENCY CALCULATION</b> |             |             |             |             |             |             |             |             |             |             |
| 17                                       | \$117,338   | \$117,338   | \$117,338   | \$117,338   | \$117,338   | \$117,338   | \$117,338   | \$117,338   | \$117,338   | \$117,338   |
| 18                                       | \$2,200     | \$2,200     | \$2,200     | \$2,200     | \$2,200     | \$2,200     | \$2,200     | \$2,200     | \$2,200     | \$2,200     |
| 19                                       | \$27,207    | \$27,207    | \$27,207    | \$27,207    | \$27,207    | \$27,207    | \$27,207    | \$27,207    | \$27,207    | \$27,207    |
| 20                                       | (31,227)    | (31,227)    | (31,227)    | (31,227)    | (31,227)    | (31,227)    | (31,227)    | (31,227)    | (31,227)    | (31,227)    |
| 21                                       | \$33,457    | \$33,321    | \$33,185    | \$33,049    | \$32,913    | \$32,777    | \$32,641    | \$32,505    | \$32,369    | \$32,233    |
| 22                                       | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         |
| 23                                       | (10,636)    | (10,328)    | (10,020)    | (9,711)     | (9,403)     | (9,095)     | (8,786)     | (8,478)     | (8,169)     | (7,861)     |
| 24                                       | \$138,339   | \$138,511   | \$138,683   | \$138,855   | \$139,028   | \$139,200   | \$139,372   | \$139,545   | \$139,717   | \$139,889   |
| 25                                       | \$139,768   | \$139,768   | \$139,768   | \$139,768   | \$139,768   | \$139,768   | \$139,768   | \$139,768   | \$139,768   | \$139,768   |
| 26                                       | 1,430       | 1,257       | 1,085       | 913         | 740         | 568         | 396         | 223         | 51          | (121)       |
| 27                                       | 101.0%      | 100.9%      | 100.8%      | 100.7%      | 100.5%      | 100.4%      | 100.3%      | 100.2%      | 100.0%      | 99.9%       |

Financial Feasibility Test

1 Shoal Lake Expansion Project

|    | 2027                                  | 2028        | 2029        | 2030        | 2031        | 2032        | 2033        | 2034        | 2035        | 2036        |
|----|---------------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
|    | YEAR 21                               | YEAR 22     | YEAR 23     | YEAR 24     | YEAR 25     | YEAR 26     | YEAR 27     | YEAR 28     | YEAR 29     | YEAR 30     |
| 2  |                                       |             |             |             |             |             |             |             |             |             |
| 3  |                                       |             |             |             |             |             |             |             |             |             |
| 4  |                                       |             |             |             |             |             |             |             |             |             |
| 5  | 22                                    | 22          | 22          | 22          | 22          | 22          | 22          | 22          | 22          | 22          |
| 6  | 10,435                                | 10,435      | 10,435      | 10,435      | 10,435      | 10,435      | 10,435      | 10,435      | 10,435      | 10,435      |
| 7  | 296                                   | 296         | 296         | 296         | 296         | 296         | 296         | 296         | 296         | 296         |
| 8  | \$139,768                             | \$139,768   | \$139,768   | \$139,768   | \$139,768   | \$139,768   | \$139,768   | \$139,768   | \$139,768   | \$139,768   |
| 9  | <b>RATE BASE</b>                      |             |             |             |             |             |             |             |             |             |
| 10 | \$1,305,231                           | \$1,305,231 | \$1,305,231 | \$1,305,231 | \$1,305,231 | \$1,305,231 | \$1,305,231 | \$1,305,231 | \$1,305,231 | \$1,305,231 |
| 11 | \$669,936                             | \$697,143   | \$624,350   | \$651,556   | \$678,763   | \$705,969   | \$733,176   | \$760,383   | \$787,589   | \$814,796   |
| 12 | \$838,348                             | \$607,121   | \$775,894   | \$744,667   | \$713,440   | \$682,213   | \$650,986   | \$619,759   | \$588,532   | \$557,305   |
| 13 | \$6,736                               | \$6,730     | \$6,724     | \$6,718     | \$6,712     | \$6,706     | \$6,700     | \$6,694     | \$6,688     | \$6,682     |
| 14 | (\$98,328)                            | (\$94,313)  | (\$90,299)  | (\$86,285)  | (\$82,270)  | (\$78,256)  | (\$74,242)  | (\$70,227)  | (\$66,213)  | (\$62,198)  |
| 15 | <b>REVENUE DEFICIENCY CALCULATION</b> |             |             |             |             |             |             |             |             |             |
| 16 |                                       |             |             |             |             |             |             |             |             |             |
| 17 | \$117,338                             | \$117,338   | \$117,338   | \$117,338   | \$117,338   | \$117,338   | \$117,338   | \$117,338   | \$117,338   | \$117,338   |
| 18 | \$2,200                               | \$2,200     | \$2,200     | \$2,200     | \$2,200     | \$2,200     | \$2,200     | \$2,200     | \$2,200     | \$2,200     |
| 19 | \$27,207                              | \$27,207    | \$27,207    | \$27,207    | \$27,207    | \$27,207    | \$27,207    | \$27,207    | \$27,207    | \$27,207    |
| 20 | (31,227)                              | (31,227)    | (31,227)    | (31,227)    | (31,227)    | (31,227)    | (31,227)    | (31,227)    | (31,227)    | (31,227)    |
| 21 | \$32,097                              | \$31,961    | \$31,824    | \$31,688    | \$31,552    | \$31,416    | \$31,280    | \$31,144    | \$31,008    | \$30,872    |
| 22 | \$0                                   | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         |
| 23 | (7,553)                               | (7,244)     | (6,936)     | (6,628)     | (6,319)     | (6,011)     | (5,703)     | (5,394)     | (5,086)     | (4,778)     |
| 24 | \$140,062                             | \$140,234   | \$140,406   | \$140,579   | \$140,751   | \$140,923   | \$141,096   | \$141,268   | \$141,440   | \$141,613   |
| 25 | \$139,768                             | \$139,768   | \$139,768   | \$139,768   | \$139,768   | \$139,768   | \$139,768   | \$139,768   | \$139,768   | \$139,768   |
| 26 | (294)                                 | (466)       | (638)       | (811)       | (983)       | (1,155)     | (1,327)     | (1,500)     | (1,672)     | (1,844)     |
| 27 | 99.8%                                 | 99.7%       | 99.5%       | 99.4%       | 99.3%       | 99.2%       | 99.1%       | 98.9%       | 98.8%       | 98.7%       |