



抚顺矿区煤层气项目招商报告

# Investment Opportunities in Coal Mine Methane Projects in Fushun Mining Area



United States Environmental Protection Agency



China Coalbed Methane Clearinghouse

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Chairman: Wang Zhanzhou

Dear Colleague,

Fushun Mining Group Co., Ltd. is a large state-owned coal enterprise in China, which has abundant coal reserves. Presently, the annual coal output of the company is maintained at around 6.00Mt, with total fixed assets of 4.66 billion yuan and net value of 2.79 billion yuan. During the "Tenth Five-Year-Plan" period, a new economic structure is to take shape on the basis of maintaining coal output, three pillar industries such as comprehensive utilization of coal and oil shale and development and utilization of coalbed methane will play an important role.

Fushun is one of the areas in China that first conducted coal mine gas extraction from producing mines. Annual coal mine methane drainage from Fushun mining area is averaged at over 100.0 million  $m^3$  since 1983. In 2000, Fushun Mining Group Co., Ltd. cooperated with NorthEast Coalfield Geology Bureau to develop coalbed methane resources in Fushun mining area. So far, 2 surface wells have been completed, and one of them has a daily gas production over 2000  $m^3$ .

There is a big market potential for coalbed methane development in Fushun mining area. Fushun mining area is only 30km from the municipal city gas supply

pipeline of Shenyang, the capital city of Liaoning Province. So far, the Company has set up the first stage of the Shenyang CMM supply project, which supplies an annual total of 58.80 million  $m^3$  of methane to Shenyang city. The second stage of the project will supply to Shenyang with the mixture of high concentration CMM from surface wells and middle heating value CMM from underground drainage systems of Laohutai Mine. Total investment involved will be 156.0 million yuan. The supply capacity will be 61.84 million  $m^3/a$  (pure  $CH_4$ ).

We warmly welcome friends from home and abroad to come to Fushun Mining Group Co., Ltd. for field investigation or business talks. We would do our utmost to provide preferential treatment to foreign investments so as to widen the ways to international cooperation and cooperation areas.

Sincerely,

Wang Zhanzhou

Chairman, Fushun Mining Group Co., Ltd.

## Executive Summary

Fushun Mining Group Co., Ltd. is a large state-owned coal enterprise in China. Currently, coal production in the Fushun mining area is about 6 million tons per annum. Fushun is mainly producing blending coking coal and steam coal.

Fushun Mining Group Co., Ltd. is also rich in coalbed methane resources that total around 8.9 billion m<sup>3</sup>. Coal in this mining area is low in sulfur and ash content, and has well-developed fissures. Porosity of the coal is up to 10%. Fushun coal also has very good permeability which averages at 0.5 - 3.8 md. Since coal seams in the Fushun mining area have high permeability, high gas content, good gas reservoir conditions and high methane content, conditions are favorable for the commercialization of coalbed methane development and utilization.

Fushun is one of the first mining areas where underground gas drainage was adopted. Annual coal mine methane drainage in the Fushun mining area has been over 100.0 million m<sup>3</sup> since 1983. Coal mine methane drainage in 2000 reached 126 million m<sup>3</sup>.

In 2000, the Fushun Mining Group Co., Ltd. signed a contract with the Northeast Bureau of Coal Geology for joint development of coalbed methane in the Fushun mining area. So far, two surface wells have been drilled and one of them is in the process of trial production, with a daily output reaching 2,000 m<sup>3</sup>.

### Investment Opportunities

CMM from the Fushun mining area is mainly supplied to the city of Shenyang. The first stage of the Shenyang CMM supply project has been completed, with a designed supply capacity of 58.8 million m<sup>3</sup>. Following is a summary of the second stage of project, for which Fushun Mining Group Co., Ltd. is seeking investments:

*Second stage of the Shenyang CMM supply project.* The purpose of the second stage of the project is to supply to Shenyang with a mixture of high concentration CMM from surface wells and from underground drainage systems of the Laohutai Mine. Thirty-two wells will be drilled, with CMM production from each well estimated at 4,000 m<sup>3</sup>/d. Based on current and planned underground drainage and utilization at the Laohutai Mine, the annual gas supply for the Shenyang CMM supply project is 15.12 Mm<sup>3</sup>. The supply capacity of the second stage of the project will reach an estimated 61.84 Mm<sup>3</sup> annually. Total cost of the second stage of the project is estimated at 155.58 million yuan (\$US 18.74 million). The funding sources can be divided into two parts. The first part includes relevant bank loans and investment from foreign companies totaling 76.63 million yuan (\$US 9.23 million). The second part is self-raised funds of Fushun Mining Group Co., Ltd. and utilization of existing facilities. The self-raised funds will be 41.26 million yuan (\$US 4.97 million), utilization of existing facilities 37.7 million yuan (\$US 4.54 million). Based on the total investment of

155.58 million yuan (\$US 18.74 million), the estimated net present value would be 66.5 million yuan (\$US 8.01 million), the internal rate of return would be 23%, and payback time would be 7 years. Fushun Mining Group Co., Ltd. proposes to begin the project in April 2002 and anticipates completion by the end of 2005.

Fushun Mining Group Co., Ltd. recognizes that investment in the project entails certain inherent risks, such as potential fluctuations in CMM production and sales prices. Fushun Mining Group Co., Ltd. is prepared to address investor concerns with other important issues, such as repatriation of funds.

Fushun Mining Group Co., Ltd. is willing to consider various types of partnerships and financing sources in order to realize the proposed projects. Representatives of banks, foreign companies, foreign governments and international agencies are encouraged to review the attached marketing package and contact us for more information:

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## 1. Overview

Fushun Mining Group Co., Ltd. is one of the largest coal enterprises in China. It is situated in the city of Fushun, Liaoning Province in northeastern China. It is about 45 km from Shenyang, the capital of Liaoning Province, 126 km from Anshan, an iron and steel manufacturing center, and 450 km from Daliang, a coastal city and major port (Figure 1).

The Fushun mining area possesses abundant coal reserves and the coal is of excellent quality. Although coal has been mined for over one hundred years, there still remain 800 million tons of recoverable coal reserves. Total estimated coalbed methane resources are 8.9 billion m<sup>3</sup>.



**Fig.1 Location of Fushun Mining Area**

Fushun was one of the first mining areas to adopt underground gas drainage. As a result of many years of experience with gas drainage, a sound method, suitable for the conditions of the mining area, has been established. Currently there exist three drainage systems in the mining area. In 2000, 126 million m<sup>3</sup> of methane was drained. CMM from Fushun is mainly supplied to Shenyang city. At present, the annual designed capacity for gas supply is 58.8 million m<sup>3</sup>, and the CMM is mainly drained from underground areas of the Laohutai mine. The Fushun mining area is also developing CMM from the surface.

The Fushun Mining Group Co., Ltd. proposes to increase methane supply via a “second stage CMM supply project” that would supply Shenyang with a mixture of high concentration CMM from surface wells and from the underground drainage system. The designed annual capacity is 61.84 Mm<sup>3</sup> (pure CH<sub>4</sub>). Fushun Mining Group Co., Ltd. is seeking investment