

**USE OF CONCESSION
AGREEMENTS
FOR DELIVERY OF
MUNICIPAL SERVICES IN
BULGARIA**

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USE OF CONCESSION AGREEMENTS FOR DELIVERY OF MUNICIPAL SERVICES IN BULGARIA

I. EXECUTIVE SUMMARY

This document transmits lessons learned during the portion of the Municipal Operations and Citizen Participation Project aimed at gasification in the Municipality of Stara Zagora (MSZ), Bulgaria, initiated in September 1995 through a Memorandum of Understanding between MSZ and USAID.

The gasification project has undergone substantial modification in design and purpose since its inception, principally as a result of changed conditions in the relevant legal framework and the cost effectiveness of natural gas as opposed to other types of heating fuel. Initially, the project emphasized technical and direct financial assistance to convert heating boilers in municipality-owned buildings from light diesel fuel to natural gas, aimed at creating environmental benefits such as cleaner air and a more healthy environment. By its end, the project emphasized development of a legal, regulatory, and training framework for municipalities that might wish to grant concessions to private enterprises for provision of public utilities, with model documents, forms, and workshop materials that can be disseminated to municipalities throughout Bulgaria.

Concessions are one form of private sector participation in development, management, maintenance, and delivery of public services. While useful for improving the quality of infrastructure and service and encouraging economic development, concessions have complex legal and financial ramifications which local governments must evaluate carefully before proceeding with this activity. This is especially true in Bulgaria, where such arrangements are allowed by law but restricted by the current inability of local governments to set market-based and commercially reasonable local prices for utilities such as natural gas, since pricing remains under the control of the central government.

At the present time, there is substantial activity among legislative and government bodies, however, that indicates intent to institute reform and decentralization of utility pricing, perhaps by adopting a more market-oriented approach to pricing and by devolution of at least some pricing authority to local governments. This report, including the model documents appended to it, anticipate changes in price setting methodology, and is designed to be adaptable to such changes. It is intended to serve as a tool for dissemination of lessons learned in the Stara Zagora project, to assist municipalities in deciding whether to enter into a concession agreement and how to implement such an agreement once the decision has been made.

In addition to the Executive Summary, this report includes the following sections:

- II. Introduction
- III. Background of the Stara Zagora gasification project
- IV. Review of the current relevant legal framework for concessions in Bulgaria
- V. Circumstances under which a municipality should consider granting a concession
- VI. Issues a municipality should consider in evaluating whether to grant a concession and a framework or “checklist” for implementing a concession agreement
- VII. Rights and responsibilities of the parties to a concession agreement
- VIII. Conclusion

Attached as annexes are the following documents:

- A. Model Concession Agreement; Explanation; List of Laws and Regulations
- B. Materials for Workshop on Model Concession Agreement for Natural Gas
- C. Model Spreadsheet for Cost-of-Service Pricing
- D. Materials for Workshop on Model Spreadsheet for Cost of Service Pricing
- E. Pricing Considerations for Low Income Households in the Sale of Natural Gas
- F. Stara Zagora Municipal Boiler Conversion Project Assessment Report, Prepared by Environomics, Inc., subcontractor to Chemonics, Inc., for Environmental Action Programme Support Project (“EAPS”)

The Annexes are intended to help municipalities understand the nature of a concession, when it might be appropriate, and how to design and implement concession activity. The Model Concession Agreement (Annex A) can be used under the current law, in accordance with the explanatory material attached to the model agreement. The Cost-of-Service Pricing Spreadsheet (Annex C) can be used for non-price regulated services now, and for pricing delivery of utilities if the law changes to allow local government participation in that process.

INTRODUCTION

II.

Arrangements for managing and delivering local government services are undergoing restructuring in many places in the world, including the former socialist countries of Central and Eastern Europe. Municipalities are transferring certain public service functions to private companies while retaining varying degrees of municipal ownership or control through a number of arrangements, including joint partnerships, contractual relationships, or regulatory institutions. Private sector participation is particularly attractive in areas where adequate infrastructure—such as power, transportation, telecommunications, water supply, and sanitation—is critical to the development of industry and improvement in the quality of life, but the cost of critically needed major improvements or expansion of existing systems would be beyond the means of the public budget. Under such circumstances, the private sector can be encouraged to invest the funds necessary to build or upgrade the infrastructure, in return for a monopoly or guaranteed market share and reasonable rate of return.

One such arrangement is the concession, where a municipality grants to a private entity (the concessionaire) the right and the obligation to provide what would otherwise be a public infrastructure service, such as delivery of gas, power, water, transport, sanitation, or telecommunications. The terms of the relationship between the parties is controlled by a negotiated contract, or concession agreement, under which the concessionaire is responsible for operation of the activity in accordance with specified standards and results in service delivery. Ordinarily, the private contractor is responsible at its own risk for providing the service, including operating and maintaining the infrastructure, typically against payment of a concession fee. In many cases, the private contractor is also responsible for building and financing new investments. The municipality retains ownership of the infrastructure, and, at the end of the concession term, the sector assets are returned to the municipality.

While concession arrangements can be useful in improving services and encouraging economic development, they have numerous, complex legal and financial ramifications which local governments must evaluate carefully before proceeding with this form of private sector participation in the development, management, and maintenance of public service infrastructure. This report sets out a framework for consideration of some of those issues, on the basis of experience with a pilot project for gasification in the City of Stara Zagora, Bulgaria, and reports and model documents that were developed to implement that project.

III. BACKGROUND OF THE STARA ZAGORA GASIFICATION PROJECT

Environmental Phase: Conversion to Natural Gas

The gasification project in the Municipality of Stara Zagora (“MSZ”) was initiated through a Memorandum of Understanding between MSZ and USAID in September 1995. The initial intent of the project was for USAID to provide technical and financial assistance to MSZ in order to convert heating boilers in municipality-owned buildings from light diesel oil to cleaner burning natural gas fuel, with the primary object to obtain environmental benefits of cleaner air and a more healthy environment for the citizens. Technical assistance was provided by the Local Government Initiative (LGI); technical specifications and financial assistance were provided by the Environmental Action Programme Support Project (EAPS).

In 1993, MSZ had entered into a joint venture with Overgas, Ltd., the local natural gas distributor. The joint venture was part of a regional development partnership intended to enable the municipality to control the expansion and improvement of the gas distribution system and to realize a profit from its operations.

In late 1994 and early 1995, the joint venture installed a natural gas pipeline to serve the industrial area to the south of Stara Zagora. In 1997, the joint venture extended the pipeline through the residential and commercial areas of the city, and, during 1998, converted the boilers in 21 municipal facilities from light diesel oil to gas fuel and connected them to the pipeline. The buildings include hospitals, schools, day care centers, recreation facilities, and the municipal office building.¹

Concession Phase: Divestiture by MSZ

In June 1996, the Government of Bulgaria passed a Municipal Properties Act, which for the first time allowed municipalities to enter into concession agreements with private entities for private use of municipal property to carry out economic activity within the municipalities’ geographic region. Such use of municipal property could include the installation and maintenance of utility distribution systems. This legislation provided the opportunity to initiate USAID technical assistance activity geared toward building local expertise in public service concessioning.

Various approaches for continuing the conversion and expansion of gas

¹ A report on technical aspects of the conversions, and the environmental and health benefits expected to result, is included in this report as Annex F. *Stara Zagora Municipal Boiler Conversion Project Assessment Report*, prepared by Environomics, inc., subcontractor to Chemonics, Inc., for the Environmental Action Programme Support Project.



service were outlined for the municipality by LGI and EAPS experts at a workshop in December 1996. After considering the options, the municipality decided to delegate the installation and delivery of natural gas to a private entity, form a utility commission to monitor and regulate this activity, and undertake the divestiture of the municipality's interest in the joint venture with Overgas. In June 1997, action was taken by the Municipal Council of Stara Zagora to establish a Utilities Commission, appoint its members, and determine the scope of its responsibility. In August 1997, the municipality passed legislation to divest itself of its interest in the joint venture with Overgas.

Status of the Stara Zagora Project

At the present time, a number of steps remain to be executed by MSZ. It must determine whether it will continue to develop its natural gas service through the granting of a concession to a private party. If so, MSZ must implement the divestiture of its interest in the joint venture with Overgas, negotiate a concession agreement, and initiate utility regulation under the authority of the Utilities Commission.

Since the inception of the project, unforeseen events have altered its design and outcome, at least in the short run. For example, reductions or stabilization in the cost of various fuels on international markets make residential conversion to natural gas not cost effective at the present time; use of natural gas by residential customers is unlikely to occur on a widespread basis in the foreseeable future.

In addition, while legislative change in the pricing of natural gas in Bulgaria is anticipated, it did not occur during the life of this project. The price to end users is still not a commercial or market-based price, and remains regulated by the central government under a State Public Commission on the Prices of Energy, under the jurisdiction of the Ministry of Trade and Tourism. Prices are proposed by the Commission for approval by the Council of Ministers. At the present time, various approaches to the issue of price setting are under consideration by central government agencies. Until this is resolved, the scope of a local government's authority to set market or cost-based prices, through its own regulatory commission or through agreement with a utility concessionaire, will remain unclear.

While other cities in Bulgaria have entered into agreements with private partners for delivery of public services, MSZ was the first to establish a utility regulatory commission. The national government and other municipalities have followed events in Stara Zagora with great interest, to see not only if the model

could be replicated in other cities but also if it could provide a model for regulation of utilities at the national level.

Despite alterations in the original plan, USAID has continued to provide technical assistance and direct reimbursement for boiler conversions, to enable MSZ to increase the quality of municipal services to its inhabitants and to develop a model for municipal concessions and regulatory activity that could be replicated in other cities and for public services other than gasification. To increase the effectiveness of the effort, a public information program to disseminate current, accurate information to the residents of Stara Zagora on the status of the gasification program has been an integral and important part of the technical assistance plan.



IV. LEGAL FRAMEWORK FOR CONCESSIONS IN BULGARIA

Laws

The principal items in the legal framework for granting a concession in Bulgaria are the Municipal Property Act (MPA), the Regulations for Implementation of the Municipal Property Act (RIMPA), and the Concessions Act. MPA, effective June 1, 1996, gives municipalities the authority to grant to another party a concession for a specific right to use municipally owned sites or property and to perform services related to the sites or property which are ordinarily carried out by the municipalities.

A complete list of laws relevant to concessions is included after the Model Concession Agreement in Annex A.

Important Features of the Model Concession Agreement

The Model Agreement was drafted in accordance with Bulgarian law and practice, and complies with the legal requirements of MPA, RIMPA, and other substantive law. An opinion of Bulgarian lawyers on the legality of the Model Agreement is included with the agreement attached to this report as Annex A. However, there is little experience in Bulgaria with the granting of concessions, so there remains substantial uncertainty about important issues that cannot be answered simply by referring to the relevant laws—issues such as pricing of the service, the amount of the concession fee, interpretation of property rights, setting and enforcing standards of quality of service, and consumer protection and safety. Many of these issues were considered extensively during the technical assistance phase of this project. The results of this work are reflected in the contents of the Model Concession Agreement.

Some provisions of the Model Agreement are not required by law but can be included by mutual consent of the parties.² Other provisions are included that will allow the parties to draft an agreement that reflects greater autonomy on the part of the municipality in the area of pricing than now exists, but could incorporate the results of draft legislation actively under consideration that would implement reform and decentralization of price setting. Certain changes in the legal framework are anticipated so the Model Agreement will not become obsolete but can continue to support the concept of concessioning as a means for municipalities to fulfill their obligation to provide services to citizens, to allow

² Article 25 of RIMPA states that a Concession Agreement may include "other issues on which the parties have reached agreement."

citizens to be informed and to participate in their governance, and to protect municipal property rights.



In a concession agreement, it is very important to cover as precisely as possible the specific features of the subject of the concession. The Model Agreement covers a “mixed” concession, in that it grants permission to the concessionaire to perform gasification, the subject of the concession, and also a specific right of use of public municipal property related to the activity. Such property would include existing metering facilities, pressure reduction stations, and pipelines, if they have been built and are usable, and also sites that the concessionaire would build to fulfill its obligations under the agreement to provide and maintain the infrastructure necessary to perform the concession activities. The right of the concessionaire to use sites not in existence at the time the agreement is made but constructed during the concession performance is reinforced in Chapter III of the Model Agreement, “Rights and Obligations of the Parties,” since it is fundamental to the performance of the activities under the concession.

A second important characteristic of the concession is the land or territory on which it is to apply. The general definition “on the territory of X municipality” is acceptable if it is assumed to include the entire territory of the respective municipality in accordance with the “Uniform Territorial Plan of the Republic of Bulgaria.” This Model Agreement designates an exact territorial area of the concession on a map attached to the agreement, at least in part because certain territory will be excluded from the concession to allow for continuation of service to industrial consumers who are now supplied with gas through agreements with Bulgargas.

In the definition of “gasification,” the end users of gas are given as public, administrative, and industrial enterprises, and households. The granting of unrestricted distribution service enhances the value of the concession. If there are limitations on the consumers that can be serviced by the concessionaire, they must be listed in the agreement, as noted above in the case of existing Bulgargas customers. In this Model Agreement, a service limitation was imposed by conditioning the “right to supply” in Chapter III, Rights and Obligations of Parties.

Finally, when defining the subject of the concession, it is essential to clarify the ownership of concession sites, particularly those built in the performance of the concession agreement by and at the expense of the concessionaire. The newly built sites will be public municipal property (in compliance with MPA), and this is clearly stated in the Model Agreement. Public ownership of sites to be built on private land is also required, under the Act for Territorial and Town Planning, Art. 63, item 2. This law provides that property for gasification and distribution of gas for the benefit of the municipality shall be expropriated and the

owner compensated in accordance with enacted construction and regulation plans.

V. WHY SHOULD A MUNICIPALITY GRANT A CONCESSION?

As discussed in the Introduction, concessions often used to encourage private investment in building and improving municipal infrastructure. They are a useful approach when such infrastructure—power, transportation, telecommunications, water supply, and sanitation—is inadequate, yet is critical to the development of industry and improvement in the quality of life, and the cost of necessary improvements or expansion of existing systems would be beyond the means of the public budget.

Concessions are ordinarily granted to provide a service for which there is a natural monopoly, that is, the market would not support competition among firms for providing the service, either because the investment and delivery costs are too high for multiple firms to enter the market or because the costs of competition would drive up the price of the service to a point where it would be unaffordable for most consumers. Infrastructure sectors, such as water, electrical and gas distribution, are the most common examples of natural monopolies. Concessions can provide an acceptable substitute for market competition by controlling the cost and quality of service through regulation and contract rather than consumer choice. By granting an exclusive right to provide such service, the government creates a legal monopoly, subject to regulation and term limitations to preserve the public interest in good quality and fair pricing of service.

In order for a concession to succeed, the municipality must be in a position to provide the concessionaire with appropriate incentives to operate efficiently. This report includes, as Annex C, a model spreadsheet for cost-of-service pricing that includes a reasonable profit margin as well as financial operations, system expansion, and end-user impact for local gas distributor pricing. The model spreadsheet is based on principles that are just beginning to appear in Bulgaria, where, as noted above, centralized and non-market based utility service pricing is still the rule. It is meant to be adaptable and flexible so that it may be modified as reform of government pricing policy increases and moves toward cost-of-service principles.

VI. ISSUES FOR A MUNICIPALITY TO CONSIDER IN GRANTING A CONCESSION



The following are issues that a municipality should consider in deciding whether to grant a concession, the scope of the concession, and some of the most important terms of its performance.

What Is Granted?

This seems like a simple question, but the answer becomes the first important step in defining a concession. Is it a “special right to use” project involving municipal property, or is it a “permit” to perform an activity that is a municipal privilege? The special right to use would apply to existing municipal infrastructure, such as a water treatment plant, a water reservoir, or roads. A permit allows the performance of an activity with the grantee’s own equipment, or where at least a majority of the infrastructure is the concessionaire’s property.

If the concessionaire uses its own property, how will it be compensated for its investment if the concession later goes to another party? If it is municipal property, what obligation does that concessionaire have for maintenance and repair?

Concession activity usually requires a natural monopoly to be financially efficient. In deciding what to include in granting a concession, a municipality should be careful not to include activities such as the marketing, sale or installation of equipment (such as gas cooking stoves) that use the service or permitted activity and are related to the monopoly but do not need its protection.

How Is the Activity to be Performed?

A concession ordinarily is granted according to the terms of a tender, and in accordance with the response submitted by the successful bidder.³ When there is no tender, it remains the municipality’s function to define what it expects of the concessionaire. RIMPA also requires analyses and other documentation which a prospective concessionaire must submit, such as a business plan, a time schedule for completion of the concession requirements, and methodology for compliance with performance standards. The concession agreement should spell out in detail the activities to be performed and the standards which will apply to them, including kind and quality of service, safety of persons and property, information services and public participation, and reporting requirements. All relevant state and municipal regulations should be cited, and

³ The concession relationship with Overgas under consideration in Stara Zagora would be exempt from tender requirements under the law because of the pre-existing joint venture between the parties.

the agreement should require the concessionaire to comply with them. If safety and property protection are not adequately covered in existing regulations and ordinances, the municipality will have to supplement them with local legislation.

Kind and quality of service performance may depend on the state of development or the condition of the infrastructure. If a distribution system is to be built and service provided, construction time tables are important. Hours of service, pressure in the line, uninterrupted service—all such factors should be considered. If the concessionaire must depend on a source of supply outside of its control, contingency plans for sources should be described in the event of failure of supply.

Because of the lengthy term of a concession, the municipality must have a vision of the level of change in service requirements anticipated during that time. At a minimum, performance requirements should incorporate the municipality's most current plan prepared under the requirements of the Territorial, Urban, and Rural Development Act.

How Is the Activity to Be Priced?

In a natural or legal monopoly, the effect of competition is removed from economic consideration in setting price. The incentive for efficiency and innovation are lacking, and the consumer does not have the choice of another supplier. A concession should establish terms of pricing that realistically reflect the concessionaire's needs and also protect the interest of consumers, and the concession agreement should describe exactly what is expected in terms of performance for the price to be charged.

General consideration in establishing prices include the following:

- Allowable percentage of return on investment
- Allowable managerial compensation
- Expenses allowed in the computation of profit
- The separation of costs for unrelated services and enterprises
- Plant and equipment and the value in the investment base upon which investors' return is calculated
- Methodology to establish tariffs to be charged to customers for service

Tariff methodology can be as simple as allowable costs or revenue requirements divided by the total units of service expected to be delivered—a basic unit cost. Other methods might include consideration of different costs to



serve different classes of customers—a cost of service rate. Developing a cost of service rate requires considerable analysis and allocation of costs and facility capacity, and consumption data by class of customer.

In Bulgaria, pricing of most municipal services is still performed at the central level. In the case of natural gas, imported from Russia, a price is set at the country's border, a transportation fee per 100 km is added, and a domestic price is determined by the Ministry of Trade and Tourism. At the present time, a concession agreement should refer to the existing pricing system, but confer on the municipality the right to regulate the price if the central government deregulates it or shifts responsibility for the final retail price to the local government.

Reporting Requirements

With large capital investments and lengthy construction time, municipal concession projects create a need for regular reporting by the concessionaire to the municipality, and sharing of management and planning information between the parties. By requiring such information, the municipality keeps abreast of activities under the concession but also creates stronger management skills and a uniform data base that can be used to measure and compare similar concession activity on a regional or state level. It also provides useful data on service capacity, peak usage, growth, and product loss through distribution.

Information to be reported would include operation data, financial data, capital investments, customer consumption and billing information, plans for future programs and system growth, and capital planning.

Operation data is helpful in determining the cause of below-standard service. It includes:

- Rated capacity of all key points in a transmission and distribution system
- Rated capacity of treatment plants or pressure reduction stations
- Measured input/output at key points in the system on a day/month/year basis
- Percentage ratios of input/output to measure product leakage and meter accuracy
- Peak output hour/day and its percentage of facility rated capacity
- Information on service interruptions, gas leaks, and safety/emergency incidents

Financial data should include, at a minimum, an annual balance sheet, profit and loss statement, statement of change in cash position, and list of investment in and retirement of capital assets. These should be prepared in the accounting format acceptable under state standards and reviewed by independent auditors, if required by the accountancy law.

Obtaining consumption data by class of customer will help the municipality meet the state's planning requirements, and is useful in projecting growth. Comparing planning data and actual consumption data allows for informed supply and capacity projections. Volume of service, number of customers in a class, and average consumption by class provides basic input for tariff setting using cost of service methodology. This data can also help measure the adequacy of the concessionaire's response to customer complaints and its ability to meet performance standards.

An operation plan and a capital investment and improvement plan should be developed and updated annually. A suggested planning cycle is three years for operating plans and five years for capital plans.

These reporting requirements could be used as the basis for an annual meeting between the concessionaire and the municipality, open to the public. Public comment and discussion during this meeting would assist both the concessionaire and the municipality make better use of their resources in carrying out their obligations in this activity.



Concession Fees

In granting a concession, a municipality allows a private operator to act on its behalf, and allows the operator the opportunity to make a profit in performing a municipal service. How does the municipality charge for conferring these benefits? Some considerations in establishing a concession fee are as follows:

- What is the fee used for?
- What is the fee based on?
- What are the price controls?
- Can the fee be passed on to consumers?
- Is the fee included in the concessionaire's allowable profit?
- Is the fee a base charge or a variable amount?

In answering these questions, one may assume that the concessionaire owns any investment in plant and equipment it has supplied to perform the required activity, and that this property is taxed by the state and municipality according to current law. These tax revenues should not be confused with a concession fee.

In some municipalities, the fee is established as a percentage of the concessionaire's projected concession billings. In others, concession fees are used to pay any costs incurred by the municipality in managing or regulating the concession. The fee would be based on a budget of anticipated concession expenses prepared by the municipality. Sometimes the fee is used to support an unrelated municipal service, such as maintenance of a recreation program or park. Innovative uses of concession fees can be beneficial to the concessionaire as well as the municipality. With natural gas, for example, the cost of conversion makes inroads into residential usage difficult. Concession fees could be used to set up a revolving fund to provide low or no interest loans for residential conversion. This results in additional customers for the concessionaire, and improved conditions for the municipality's residents.

The fee should not be a financial burden to the concessionaire. The municipality must realize that the parties are partners in providing a service to citizens which has an intrinsic environmental and economic benefit. Both parties have an interest in the success of the concession activity.

Ownership and Use of Property and Equipment

The issue of ownership and maintenance of property (other than land, which remains in the ownership of the municipality) and equipment must be

addressed in the concession agreement. If the concession permits performance of a service in or use of municipal buildings, networks, and equipment, ownership should remain with the municipality, but responsibility for maintenance and repair is subject to negotiation. The decision on this issue could affect liability and obligation in the event of service failure. The most practical approach is for the operator to be responsible for day to day repair, preventive maintenance, and minor replacements, and for the municipality to be responsible for major replacements and renewal that extends the useful life of the plant and operating equipment that it owns. Otherwise, the concessionaire should retain rights in its investments, which could be determined in a number of ways, for example, current replacement value after depreciation for years of service.

If the permitted use is accomplished primarily through the concessionaire's investment, ownership as well as the obligation for repair and maintenance of the physical plant and equipment should remain with the concessionaire. The agreement should provide that the concessionaire's investment is recoverable at fair market value, but the concessionaire cannot interfere with the orderly transfer of the infrastructure necessary to continue the provision of service if the concession is terminated.

Ownership of Concession Rights

At no time does the ownership of rights to special use or permission to perform an activity transfer from the municipality to a concessionaire. The concessionaire cannot sell these rights, or otherwise transfer them without the municipality's full approval. The rights cannot be pledged or mortgaged as collateral for a loan or any other promise to perform by the concessionaire, and ordinarily the inability to pledge or mortgage extends to any assets or other property integral to the performance of the concession activity. However, revenue generated by the concession activity can be pledged, for example, in revenue bonds for construction or short term notes to improve cash flow. A concessionaire's default in a pledge agreement effectively would trigger the automatic bankruptcy clause in the concession agreement.

Performance Guarantees; Nonperformance; Liabilities

Performance guarantees are required under MPA, Art. 73(5), and RIMPA, Art. 25(5). In drafting language to include in a concession agreement, the minimum service level should be defined as a level of performance. Performance guarantees should define remedies for nonperformance, including conditions that justify contract termination or payment by the concessionaire of monetary penalties.



To assure minimum performance levels and to reimburse for costs of correcting defaults in performance or replacing management to remedy nonperformance, the concessionaire should be required to obtain and maintain a performance bond for the benefit of the municipality in an amount specified in the agreement.

Performance may also be interrupted by emergencies, facility breakdown, and other reasons beyond the control of the concessionaire. The concessionaire should be liable for the expenses of any damages or destruction that results, and should be required to obtain liability, fire, and accident insurance for this purpose.

Concession “Checklist”

The following is a checklist of issues that a municipality should address before entering into a concession agreement:⁴

Basic Framework

- Adopt local-level legal provisions necessary for granting concession
- Establish or identify local regulatory authority
- Establish system of management support and oversight
- Design and implement public relations and information program

Project Identification and Analysis

- Determine if proposed project is amenable to concession
- Perform preliminary review of costs and benefits of project
- Review legal and regulatory issues (central and local)
- Determine and risks to public safety or health
- Determine preliminary criteria for selection of concessionaire
- Grant authority necessary for project to proceed
- Set timetable for project

Enabling and Supporting Measures for Specific Projects

- Grant permits and other necessary authorizations (e.g., environmental permits, rights of way)
- Determine extent and form of local government support for project
- Determine training needs and mechanisms for municipality’s role in

⁴ Adapted from Kerf et al., *Concessions for Infrastructure: A Guide to their Design and Award*, World Bank Technical Paper No.399 (1998).

project

Design the Concession Arrangement

- Draft legal instruments
- Allocate responsibilities
- Choose and design pricing rules and performance targets
- Determine bonuses and penalties
- Determine duration of agreement and reasons and methods of termination
- Design mechanisms for adapting to new or unforeseen circumstances
- Choose or design a dispute resolution mechanism

Concession Award

- Choose the method of award
- Make decisions about pre-qualification and short listing
- Determine bid structure and evaluation method
- Proceed with bidding
- Negotiate with bidder(s), as appropriate

Exercise of Regulatory Function

- Implement regulatory rules
- Supervise and monitor performance
- Enforce rules (e.g., impose penalties)

VII. RIGHTS AND RESPONSIBILITIES OF PARTIES TO A CONCESSION AGREEMENT

The fundamental right of the municipality (and obligation of the concessionaire) is the performance of the purpose of the concession. In the Model Agreement developed for this project, the concession is to set up a fuel distribution network, provide for its maintenance and quality of operation, provide supply to customers on a non-discriminatory basis, secure revenue for the municipality, and maintain control of the performance of the concession.

The first category of obligations relates to the establishment of the network and, if there is a tender process, is directly responsive to the proposal submitted in competitive bidding for selection of a concessionaire. The selection binds the bidder to carry out construction of the network, its maintenance, and its



expansion in size and capacity. The proposed semi-annual reporting period is conditional. The determination of the reporting period should take into account the schedule of the concessionaire in the execution of the obligations related to the concession. The significance of the reporting obligation on the part of the concessionaire is to provide information to the municipality on a reasonable periodic basis.

Obligations to the customers require the concessionaire to connect every user who meets the eligibility requirements in the contract for supply, as well as to comply with any current laws and regulations on citizens' access to heating fuel.

Maintaining an appropriate level of quality of service is a key obligation of the concessionaire and right of the municipality, directly related to the concessionaire's obligation to maintain the infrastructure of the supply system in an acceptable condition. The municipality's strong concern for public awareness requires that the concessionaire inform the public in advance of activities that may influence directly or hinder the normal course of life in the populated area, including repairs, need for evacuation or other safety concerns, and preventive maintenance.

Article 18, Paragraph 1 and 2 of the Model Agreement obligates the concessionaire to operate the supply network during the negotiation of a successor agreement after termination of this agreement, but not longer than six months. This guarantees that the supply of fuel will not be interrupted, in protection of the interests of the municipality and its citizens.

Article 19 through 24 provide miscellaneous additional protections for the municipality not covered by other articles, including the concessionaire's obligation to pay the concession fee, to adhere to the provisions of the Environment Act for areas or sites protected by the law, to maintain supply to customers in case of force majeure or negligent non-performance, and to insure the concession sites.

The obligations of the municipality are aimed mainly at facilitating the performance of the activities required of the concessionaire. The municipality must render legal protection of the concessionaire against actions or claims of third parties which might impede the activities granted under the concession, and is obliged to guarantee the exclusivity of the rights of the concessionaire on the territory designated in the agreement. The municipality may not in any way hinder the activities of the concessionaire and must offer assistance in obtaining the necessary construction and other permits and licenses.

The article on “Rights and Obligations of the Parties” in the Model Agreement and the Decision of the Municipal Council to Grant a Concession are the basic documents describing the obligations of both the municipality and the concessionaire. Art. 25 of RIMPA mandates certain rights and obligations be included in the agreement, and allows for other provisions to which the parties agree.

Due to the complex characteristics of a utility supply and distribution concession, in the Model Agreement the section on "Rights and Obligations of Parties" is subdivided into rights and obligations related to the right of use of the system and to permission to provide service to the municipality.

Section 1 of "Rights and Obligations of the Concessionaire" is related to the rights of the concessionaire in the operation of the distribution system. The municipality grants permission for performance of activities, and awards a specific right of use of sites on public municipal property. To carry out the intent of the agreement—utility supply and distribution activities—the concessionaire is awarded the exclusive rights to construct the necessary network and facilities. This avoids possible complications in case of pre-existing facilities or facilities under construction by third parties.

Because infrastructure built by the concessionaire becomes public municipal property, Art. Six awards a specific right of use of the facilities built to implement the agreement, and establishes a limited property right of use of a site in favor of the concessionaire, taking into account the fact that the objects concerned do not presently exist but will be constructed in the future. This guarantees the concessionaire unhindered use of the network in performing activities under the concession agreement.

The municipality grants to the concessionaire the exclusive right to supply utility service to end-users in the territory of the municipality. Any exceptions to this right must be listed.

The right of the concessionaire to use machinery and equipment necessary for utility supply and to carry out business relations with customers is supported in the “Subject” of the concession agreement. The concessionaire has the right to arrange relations with customers through a contract for supply. It is recommended that the municipality approve the form and content of these contracts, to protect the interests of the citizens of the municipality and further the goal of beneficial use of municipal property. The Model Agreement allows the concessionaire to terminate service to customers who are delinquent in

payment.

The concessionaire has the right to enter into agreements with subcontractors, but is liable for non-performance or default by subcontractors. It cannot transfer any of its rights under the concession agreement to third parties without the express approval of the municipality.

VIII. CONCLUSION

Entering into a concession agreement for infrastructure development and utility distribution is a complex undertaking for a municipality, particularly in a country like Bulgaria, where concession experience is scant, major infrastructure for utility services is largely undeveloped, and the legal and regulatory framework does not afford municipalities sufficient autonomy to set prices for delivery of local services.

Indications are that the environment is changing, however, and municipalities are granting concessions under current law for services other than natural gas. Concessions can be a useful tool for development and delivery of municipal activities, and can be expected to play an increasing role as Bulgaria moves toward market-based reforms and increasing decentralization of government authority.

ANNEXES

ANNEX A

MODEL MUNICIPAL CONCESSION AGREEMENT FOR NATURAL GAS SERVICE

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MODEL MUNICIPAL CONCESSION AGREEMENT FOR NATURAL GAS SERVICE

PART 1

INTRODUCTION

The Municipal Property Act (MPA), effective June 1, 1996, gave Municipalities the authority to grant Concessions for the right to use Municipal public property, and permission to perform a Municipal activity with and on that property. As in the use of any new authority, with the exception of the Council of Minister's Regulations for the Implementation of the Municipal Property Act (RIMPA), there was little experience or guidelines to assist a Municipality in granting a Municipal Concession.

This Technical Assistance Project has worked with the Municipality of Stara Zagora to investigate the process of developing a Concession Agreement for the gasification of its municipal territories. In providing this assistance the problems related to pricing, interpretation of property ownership rights, providing concession service while insuring that municipal property is used for the benefit of it's citizens, and numerous other legal questions were identified.

In addressing these questions and problems, a number of workshops were delivered. Considerable information and expert opinion were developed. This Model Concession Agreement is presented to provide that material to a broader audience than Stara Zagora and the workshop attendees.

Model Concession Agreement

The Model Agreement assumes that a tender or competitive bidding procedure is used in selecting the Concessionaire. A bid or tender assumes that the Municipality has prepared a detailed description of the duties to be preformed by the Concessionaire. This request for bids and the negotiated response to it by the successful bidder will be incorporated into the Model Agreement. In cases where a tender or bid is not required, the Municipality should prepare a detailed description of the Concessionaire's duties and any system expansion plans that the Concessionaire agrees to, and incorporate them into this an attachment to the Agreement.

In Part 2, a Model Concession Agreement document is presented. This document reflects U.S. technical assistance in some of its substantive aspects. Its legal form and characteristics were drafted in accordance with Bulgarian law and practice. Included in this document are the legal requirements called for in the MPA and RIMPA. In preparing the Model Concession Agreement document, the legal experts used Bulgarian law in effect as of October 1, 1998.

The document also includes language describing Articles that could be included by mutual agreement of parties. In some cases, the Articles address future treatment under law if and when progress in ongoing government reform transfers more authority beyond the Council of Ministers. These Articles may appear premature, but at the time this paper is being prepared there is considerable draft legislation and reform activity in this area underway in the Council of Ministers.

In other cases, the Articles contain agreement between parties on conditions, programs, and performance standards not explicitly covered by law. These Articles are an illustrative effort to demonstrate control of the use of municipal property for the well being of the municipal citizens. RIMPA, in Article 25, states that the Concession Contract should include “other issues on which the parties have reached agreement.” It is recommended that to help provide transparency in municipal government, this statement in RIMPA be used to develop public awareness programs and the rights of citizens in a Concession Agreement.

Discussion of the Model Concession Agreement

Part 3 consists of a discussion of the Model Concession Agreement. It is intended to answer questions the experts themselves asked while working on assignment in Stara Zagora. The legal experts have explained the legal opinions used, and referenced the laws that support those opinions. The Articles that are concerned with areas where “issues on which the parties have reached agreement” are discussed to indicate the intent and logic behind making them part of the Agreement.

In those Articles of mutual agreement, Part 3 tries to demonstrate the opportunity a natural gas concession agreement can play in a local government’s ability to fulfill its obligation to provide and extend service to the public, as well as the opportunity for the public to be informed and participate in the governing process.

In preparing this Part, it was understood that with time the laws regulating municipal concessions would change. However, we believe that these changes will not make the Model Agreement obsolete but will help clarify it and expand the application of its principles that benefit the citizens of municipalities.

Program materials for a workshop on the Model Municipal Concession Agreement for Natural Gas Service has been prepared as another tool in this project. Such workshops can be used by others in the Local Government Initiative program along with this Model Agreement in ongoing training activities.

ANNEX A, PART 2

**MODEL CONCESSION AGREEMENT
FOR GRANTING CONCESSION FOR GASIFICATION OF TOWN A**

This day, between The Town....., A Municipality, represented by the Mayor of the municipality,....., hereinafter called CONCESSIONER, and , registered office and address of management:..... registered under company case No, from the listing of Court, register, volume, page, lot,, BULSTAT, and tax No represented by , (names and position of the legal representative or the authorized person), herein after called CONCESSIONAIRE.

On the grounds of Art. 67, paragraph 1 and Art. 70 p. 2 of the Municipal Property Act, in relation to Art. 44, paragraph 1. p. 14 of the Act for Local Government and Local Administration, and decisions of the Municipal Council - A municipality, for granting concession by means of competition (tender) for gasification and for determining the concessionaire N N, respectively of1998, this agreement was concluded for the following:

Preamble

For the purposes of this Agreement:

CONCESSION shall mean the granting of a specific right of use of sites, public municipal property, intended for permanent satisfaction of public needs of municipal importance, as well as the granting of permission for performance of activities related to these sites, which are carried out by the municipality (Art. 67, paragraph 1 of the Act for Municipal Property), in accordance with the terms of this agreement.

CONCESSIONER shall mean the holder of the right of ownership of the sites or the monopoly holder for performance of the activity for which concession is granted.

CONCESSIONAIRE shall mean the person to whom is granted specific right of use or permission for carrying out activities under this agreement.

GASIFICATION shall comprise the following:

1. design and construction of gas distribution network in the town A for public, administrative, household and industrial needs (for gasification of residential and public buildings and industrial enterprises);
2. maintenance of a gasification network infrastructure, and the supply and sale of gas to end consumers of town of A.

PREFERENCE under art ... of this Agreement shall mean the right of consideration of the Concessionaire over other bidders in the granting a new concession for the same site after expiry of this Agreement.

FORCE MAJEURE CONDITION shall refer to circumstances that have occurred after signing of the contract as a result of unpredictable or unavoidable events connected with states of emergency that effect the capability to perform the obligations under this Agreement, and are beyond the control of the parties. Examples are wars, international embargo, civil disorder, terrorist actions, strikes, lock-outs (with the exception of those lock-outs which the party could have prevented), amendments to legislation, etc.

ECONOMIC NON-SUPPORTABILITY shall mean the occurrence of such circumstances, which the parties have not been able or obliged to anticipate, and which effect the ability of one or both of the parties to fulfill obligations hereunder, to such an extent that the preserving of the Agreement contradicts justice and common sense.

CONSIDERABLE INCOMPLETION OF THE INVESTMENT PROGRAM is an amounts that is...% of the investment, planned for the respective period of time, that has not been completed at this time or has been invested in the development and/or construction of sites not included in the investment plan.

Chapter I. Subject of the Concession

Art. 1. The CONCESSIONER grants a permission to the CONCESSIONAIRE for carrying out gasification, pursuant to art. 70 of the Act for Municipal Property, on the territory of town A in accordance with a map included in Attachment 1. This grant includes a permission to construct a gasification network (permanently attached facilities for a gas distribution system, gas distribution pipelines, buildings and facilities, and stations for pressure reduction, and measuring devices) which will be public municipal property. It will be built by and at the expense of the Concessionaire. Excluded from this gasification network are sites directly connected to the Bulgargas high pressure pipelines whose are presently receiving gas supply directly from "Bulgargas".

Chapter II. Term of the Agreement

Art. 2. This Agreement shall be concluded for a period of 15 years, beginning the first day of the month following the month in which it has been signed, or such other date as the parties may agree.

The term of the Agreement may be extended for another 10 years by mutual agreement of the parties, pursuant to Art. 68 paragraph 2 of the Act for Municipal Property and Decision of the Municipal Council of A for granting concession for gasification (and on the grounds of decision by the Municipal Council). The parties under this Agreement shall notify each other of their desire to extend the term of the Agreement one-year prior to the expiration of the Agreement under art. 1 above.

Art. 3. If, during the term of this contract, the term under Art. 68, paragraph 1 of the Municipal Property Act is changed, the term under Art. 2 (1) of this agreement may be changed only by mutual agreement of the parties.

Art. 4. (1) After expiration of this contract, and under other equal conditions, the CONCESSIONAIRE, under Art. 68 paragraph 3 of the Act for Municipal Property shall be preferred in the granting of a new concession for the same area and activity.

(2) In the event that the initial term of this Agreement under art. ... expires and the parties fail to reach an agreement for extension, or the Municipal Council fails to make a decision on the extension, the Concessionaire shall retain preference under para 1 above in future tenders for the concession.

Chapter III. Rights and Obligations of the Parties

Part 1. Rights and obligations of the concessionaire

Rights of the Concessionaire related to the gas distribution system for natural gas:

Art. 5. The Concessionaire shall receive the exclusive right to construct and develop a gas distribution system on the territory of the concession under art. ... of this Agreement, in accordance with the general plan, which has been submitted at the contest (tender) as part of the offer of the bidders, to provide gasification for public, administrative, domestic and industrial needs.

Art. 6. The Concessionaire shall receive specific right of use of the future sites, public municipal property, which constitute the gas distribution system, pipelines, distribution stations and other buildings and infrastructure, including adjoining areas.

Rights of the Concessionaire related to gas supply and sale to the end consumer:

Art. 7. The Concessionaire shall receive the exclusive right to supply gas to end consumers for public, administrative, household and industrial needs on the territory of town of A under art. ... of this Agreement, except in the cases explicitly listed in the list-Appendix 2.

Art. 8. The Concessionaire shall receive the specific right of use of facilities for sale of gas and the respective sites, public municipal property, on the territory of the concession.

Art. 9. The Concessionaire shall receive the right to terminate the supply to each consumer who has not paid for the quantities already supplied under the General Conditions for an Agreement under Art. 16 of the Act on Obligations and Contracts and art. 298 of the Commercial Act, and the General Conditions of supply of natural gas, presented by the Concessionaire and approved by the Municipality

Other rights of the Concessionaire:

Art. 10. The Concessionaire shall have the right to sign sub-contracts with third parties for performance of parts of the activities under this Agreement, but can not transfer to them any rights (exclusive or specific) deriving from this Agreement, and at all times is responsible for their performance.

Obligations of the Concessionaire related to the natural gas distribution system:

Art. 11. The Concessionaire shall be obligated to implement the general plan and the investment program, that were presented as part of its offer at the contest (tender) and

approved by the Concessioner within the stipulated time period, with the care of a good trader and following good faith trade practices.

Art. 12. The Concessionaire shall be obligated to carry out the activities related to operation, development and maintenance of the gas distribution system, in compliance with the construction requirements, and the technical and technological standards of the effective Bulgarian legislation.

Art. 13. The Concessionaire shall be obligated to prepare semi-annual reports on the implementation of the general plan and the investment program and to submit them to the Municipality.

Obligations of the Concessionaire related to gas supply and sale to end consumers:

Art. 14. The Concessionaire shall be obligated to connect each consumer to the network, provided that he is a part of the region supplied with gas under the concession. Assuming he has filed an application, and has met the existing requirements determined by the Concessionaire and approved by the Municipality for connection to the system.

Art. 15. The Concessionaire shall be obligated to supply gas to each consumer who pays the fees and bills due, and who has met the requirements under the effective laws and regulations (local or central level) pertaining to the use of natural gas.

Art. 16. The Concessionaire shall be obligated to maintain the supply network and the related sites and infrastructure in a technical condition that meets respective technical and other requirements.

Art. 17. (1) The Concessionaire shall be obligated to provide a high quality of gas supply in accordance with the general requirements of the laws and regulations, as well as under the additional requirements of this Agreement.

(2) The Concessionaire shall be obligated to provide public notice prior to undertaking any activity or other circumstances related to the fulfillment of the concession that would adversely affect the public.

Art. 18. (1) The Concessionaire shall be obligated, after expiration of this Agreement, to continue the gas supply to end consumers until the municipality signs an Agreement with the next concessionaire, but not longer than 6 months beyond the termination of this agreement.

(2) In the event of termination of the Agreement prior to its expiration, the provisions of paragraph 1 above shall be applied.

Other obligations of the Concessionaire:

Art. 19. The Concessionaire shall be obligated to pay to the Municipality the concession fee under this Agreement, art....

Art. 20. The Concessionaire shall be obligated, in carrying out the activities related to the concession, to fulfill the legal requirements for environmental protection, for legally protected territories and sites (cultural monuments), national security, defense and public order.

Art. 21. The Concessionaire shall be obligated to provide to the respective supervision bodies secure access to the concession sites and facilities, as well as to provide them with all reasonably requested information.

Art. 22. The Concessionaire shall not transfer his rights under this contract to third parties, nor allow the occurrence in any way whatsoever of any financial or other burdens on sites or other public municipal property on which he has specific rights under the concession.

Art. 23. The Concessionaire shall be obligated to insure, at his expense, the concession sites and networks for the benefit of the Municipality.

Art. 24. The Concessionaire shall be obligated to grant access to a third party, as designated by the Concessionaire, to carry out the activities related to the concession, in the event of force majeure. The Concessionaire shall allow this same access in the event of non-performance of the obligations under this contract, and the Concessioner has declared an event of unilateral termination of this contract on behalf of the Concessioner.

Art. 25. The Concessionaire shall be obligated to keep the documentation and information related to concession activities. After expiration of the concession the Concessionaire shall be obligated to submit all related information to the Concessioner. This information can not be made available to third parties except with the explicit approval of the Concessioner.

Part 2. Rights and Obligations of the Concessioner

The Concessioner shall have the following rights:

Art. 26. The Concessioner shall gain the right to receive the lump sum and the periodic concession payments due in the manner and under the conditions of this Agreement.

Art. 27. The Concessioner shall gain the right of ownership of sites and infrastructure of the gas distribution network and the network for gas supply, as well as on the adjoining sites which will be constructed as part of the implementation of this Agreement by the Concessionaire.

Art. 28. The Concessioner shall gain the right to access the concession sites and for the information regarding the performance of the concession activities, in order to supervise the implementation of the Agreement.

Art. 29. The Concessioner shall gain the right to require immediate action upon notice by the Concessioner from the Concessionaire to perform repair of damaged facilities.

Art. 30. The Concessioner shall gain the right to determine the format and content of the reports on the performance of the concession obligations that the Concessionaire shall be obligated to prepare on a regular basis.

Art. 31. The Concessioner shall gain the right to exercise control on the accounting of the Concessionaire related to the concession activities.

The Concessioner shall have the following obligations:

Art. 32. The Concessioner shall in no way whatsoever interfere in the performance of the Concessionaire's activities related to the concession. The Concessioner shall submit all available information which may be to the benefit of the Concessionaire in his activity.

Art. 33. The Concessioner shall be obligated to provide assistance to the Concessionaire in obtaining all permits and licenses required by law in relation to concession activities, including construction permits, approval of plans, etc.

Art. 34. The Concessioner shall be obligated to provide unobstructed performance of the activities of the Concessionaire related to the concession. The Concessioner will offer legal

assistance against factual activities or legal claims of third parties that impede the activities to be performed under this Agreement.

Art. 35. The Concessioner shall be obligated not to grant the same exclusive rights for the term of the contract to third parties for the same territory, or to end consumers.

Art. 36. The Concessioner shall be obligated to exclude from gas distribution and supply under these Agreement consumers who are supplied directly by the company which provides gas transmission and supply from high-pressure pipelines.

Chapter IV. Pricing of Natural Gas

Art. 37 (1) Prices of natural gas to customer that the Concessionaire will use shall be the prices determined by the respective regulations in force.

(2) If in future acts and regulations, the Concessioner is given the alternative legal opportunity to form the sale prices of natural gas or to take part in this process, the Municipality will excise that privilege. In that event, the selling price thus formed, shall be applied under this Agreement.

(3) If in future acts and regulations, the Concessionaire is given the legal right to form the sale prices of natural gas or to take part in this process, the Parties to the contract mutually agree to apply a methodology determined by the municipality.

Chapter V. Concession Fee

Art. 38. The CONCESSIONAIRE shall owe the CONCESSIONER a concession fee comprising a lump sum monetary payment and regular monetary payments as follows:

(1) A lump sum monetary payment amounting to USD X or the leva equivalent of the same amount payable as follows:

- the first installment in the amount of USD X or the leva equivalent, determined in accordance with the BNB exchange rate at time of payment, shall be paid at the signing of the Agreement, to the bank account of the CONCESSIONER. This installment will include the deposit paid to participate in the tender, amounting to USD X or its leva equivalent.

- the second installment in the amount of USD X or the leva equivalent, determined in accordance with the BNB exchange rate at the time of payment, shall be paid before the end of the second year of the Concession to the bank account of the Concessioner.

(2) Annual monetary payments in the period following the second year of the concession shall be determined each year in accordance with a method agreed between the CONCESSIONAIRE and the CONCESSIONER, that represents an integral part of this Agreement (see Attachment 2.)

(3) The annual concession fee shall be paid in accordance with the time table in Attachment 3, to the bank account of the CONCESSIONER.

Chapter VI. Guarantees for Performance of Obligations under The Agreement

Art. 39. (1) The Concessionaire will provide an unconditional bank guarantee, issued by a Bulgarian bank acceptable to the Municipality, as guarantee for performance of the obligation to pay the concession fee.

(2) For the first year the guarantee shall be 20% of the second installment of lump sum concession fee due under this Agreement, and under its terms can be paid to the Concessioner's bank account within 30 days of the effective due date in the Concession Agreement, if the Concessionaire fails to make the second payment when due.

(3) For each year, until 24 months following the expiry of the Agreement, the guarantee shall be 20% of the estimated concession fee revenue, and shall be paid to the Concessioner by January 31 of the year following the year due.

Art.40. The Concessionaire will provide a second unconditional bank guarantee, issued by a Bulgarian bank acceptable to the Municipality, as a guarantee for performance of the obligations for construction of the gas supply network for the duration of the concession. This guarantee will amount to 10% of the estimated investment costs for construction not yet finished.

Chapter VII. Non-performance of Obligations under the Agreement

Art.41 The Concessioner shall have the right to terminate unilaterally this Agreement in the event that the Concessionaire intentionally performs the following :

(1) Allows "considerable" non-performance of the presented General Plan and the investment program. The term "considerable" is defined in the Preamble.

(2) Interrupts the gas supply to end consumers for more than one month.

(3) Performs illegal activity related to the concession, after notification received X months ago to cease such activities.

(4) Fails to perform the obligation to prepare reports on the implementation of the concession, after notification received X months ago.

(5) Fails to maintain the gas supply system and all its parts in condition meeting the technical and technological requirements and standards after notification received X months ago.

(6) Fails to obey the obligation of non-transferability of rights of the concession and of not placing burdens on sites, which are public municipal property.

(7) Fails to make the payments of the concession fee due for a period of two consecutive years, after notification received X months ago.

(8) Fails to present the guarantees under this Agreement or does not provide insurance of the sites in accordance with Art.23.

Art. 42 .The Concessionaire may terminate the Agreement unilaterally if the Concessioner intentionally does not perform his obligation under the provisions of Art.34 to render legal assistance against the actions and interference of third persons who disturb the rights and activities of the Concessionaire under the provisions of this Agreement.

Art. 43. The parties shall not be liable for non-performance resulting from Force Majeure (as defined in the Preamble).

Art. 44. The Concessionaire shall pay a penalty amounting to X USD in the event of failure to implement the investment program, presented by the Concessionaire and approved by the Municipality. This is in addition to the guarantee for implementation of the investment plan.

Art. 45. In the event of non-performance of the obligation to maintain the gas supply to end consumers after expiration of the term under the concession agreement, the Concessionaire shall pay a penalty amounting to X US

Chapter VIII. Termination of the Agreement

Art. 46. The Concession Agreement shall be terminated in the following cases:

(1) upon expiration of the Agreement.

(2) in the event of mutual agreement by the parties. In this case the only penalty that shall be due by either party will be the reimbursement of the expenses incurred for improvements of the concession sites on behalf of the Concessionaire, in proportion with their depreciation.

(3) in case that the implementation of the agreement becomes impossible due to force majeure and/or threatens the national security, defense, environment, legally protected areas and sites, public order, the agreement shall be terminated by two-sided protocol. The only penalty due by either party, will be the expenses incurred for improvements of the concession sites on behalf of the Concessionaire, in proportion with their depreciation.

(4) In the event of termination of the juridical person of the Concessionaire, provided that the Municipal Council has not passed a decision to transfer the rights and obligations under the agreement to a person authorized by the Concessionaire.

(5) In case there is a court judgment for bankruptcy of the Concessionaire.

(6) By force of a court or arbitration judgment.

(7) in the case of a unilateral termination agreed upon in Art. 41 and 42.

(8) Under other legal provisions.

Art. 47. In the event that the grounds for termination of the agreement under paragraphs 2 - 7 above are remedied before the expiration of a two month period, this agreement shall automatically be deemed valid.

Art. 48 (1) The termination shall be accomplished by a Protocol signed by both parties which determines the property relations occurring in the event of termination.

(2) If the parties fail to reach an agreement on the Protocol, the provisions of Chapter X, Disputes and Applicable Law, shall be applied.

Chapter IX. Disputes And Applicable Law

Art. 49. All disputes between the parties shall be settled by agreement between them. If they fail to reach agreement, disputes shall be settled in accordance with the Bulgarian legislation.

Art. 50. In case of incompleteness of the agreement, the provisions of the Bulgarian material law shall be applied.

Art. 51. All disputes on interpretation, implementation and termination of this Agreement shall be referred to the Court of Arbitration of the Bulgarian Chamber of Commerce and Industry.

Chapter X. Final Provisions

Art. 52. If any circumstances occur related to the performance of the agreement, which the parties have not predicted nor were obligated to predict, in accordance with Art. 307 of the Commercial Act, upon the request of either party, the Court may amend or terminate this Agreement

Art. 53. The parties to this Agreement agree to take an active part in the development and implementation of relief programs affecting prices or methods of payment for low income households who are consumers of the natural gas supplier.

Art. 54. This agreement sets out all rights and obligations of the parties with regard to the concession. Any changes or additions shall be by mutual consent and in written form.

CONCESSIONER:

(signature)

CONCESSIONAIRE:

(signature)

PART 3

DISCUSSION OF MODEL CONCESSION AGREEMENT

Chapter I – Subject of Concession

The subject of the Concession Agreement contains three critical parts. They are, the right to use municipal sites, the permission to perform a particular Municipal activity, and the firm declaration of ownership of new sites built by the Concessionaire to carry out the granted activity. The first two parts are implied in the term “gasification”. This and other terms are defined in the “Preamble”.

In preparing this Model Concession Agreement, and in meeting with members of Municipal Councils, and members of various committees of the Council of Ministers, there has been considerable discussion of the legal foundation for a natural gas concession. The issues and questions raised in these discussions covered a wide range of topics. Included in this range were:

- Constitutionality of the Act for Municipal Property
- Does the Act for Municipal Property apply to gasification
- Can you grant a concession to perform an activity that is not a state monopoly
- Ownership of property built on municipal public property
- The use of “eminent domain” in implementing a concession

To resolve these legal arguments legal experts, Eurolex Ltd. of Bulgaria, have prepared the following comments and opinions on a gasification concession. Their theoretical arguments on the interpretation of the basic language of the law regulating the right to use municipal property, and the permission to perform a municipal activity in a concession, that will influence the clarification of the “Subject of the Concession” are expressed in the following theses.

The Act for Municipal Property and the Regulations for the Application of the Act for Municipal Property shall be the legal basis of the "municipal concession". Art. 67 of the Act for Municipal Property defines it as "granting a specific right of use of sites", public municipal property, intended for permanent satisfaction of public needs of municipal importance. It further “grants a permission for performance of activities, related to these sites, which are carried out by the municipalities.”

Therefore, this law follows the logic of the Concessions Act, and the reflection of Art.18, paragraph 5 of the Constitution, that the concession shall be the specific right of use, as well as the granting of permission for performance. Here, however, due to the specific wording of the above quoted text, is raised the question of the relationship between Art.69 and Art. 70,

of the Act for Municipal Property and Art. 67 paragraph 1 of the same Act. It should be noted that the concession activities identified by art. 70 of the Act for Municipal Property refer to a broader group of sites- public municipal property, than those that are defined in Art. 69.

One of the theses is that the activities non-related to the listed sites shall not be subject of the concession, if interpreted as “a permission” for performance of activities. The other thesis supports the doctrine that the enumeration of the specific sites - public municipal property, is not comprehensive and naturally will also influence the activities, "related to them". In fact, this enumeration only demonstrates the intention of the legislator to determine the field of implementation of the specific concession rule for use of these sites, which is different from the rule for general use that the sites have in principle.

This concept of “non-comprehensive” has the support of certain decisions of the Constitutional Court. In the arguments of Judgment 19 of the Constitutional Court, it indicates that the Government is competent to determine by law the sites and rules for public property, including the property which is not defined by the Constitution as exclusive Governmental property. Certainly this competence also refers to the sites which are municipal property since Art.17 paragraph 4 of the Constitution also covers them. This concept is in the basis of Judgment No 2 of 1996. The attitude taken is that the comprehensive enumeration of sites and activities does not impose constitutional limits on the concession regime. The quoted judgments of the Constitutional Court have been made before the adoption of the Act for Municipal Property and they should, by assumption, have taken them into consideration.

Concerning the question of implementation of the granting of a concession for performance of an activity, there are still arguments as to whether it is possible for activities that are not state monopoly to be subject to the permission method that under Art. 18 paragraph 5 of the Constitution grants other site activities. These other site activities the legislator has made equal, in terms of order and conditions for granting, of the concessions for sites that are state monopoly. It is interesting that both the supporters and the opponents of this concept use the arguments of the same Judgment of the Constitutional Court, No 2 of 1996. "The language of the Constitution contains a listing of the economic activities which the Government may, by law, organize as state monopoly. These activities are of such significance for the economy of the country that the state monopoly determined by law will be to the benefit of the citizens and of the society. ..." The listing here is also comprehensive since it is an exception of the Constitutional principles of a free market economy, which are clearly defined in Art.19, paragraph 1 and 2 of the Constitution of the Republic of Bulgaria.

Supporters of this concept believe that the Constitution does not allow monopolization of activities on behalf of the municipalities. The language of Art.67 paragraph 1, "... as well as granting a permission for performance of activities related to these sites, which are carried out by the municipalities", and art. 70 of the Municipal Property Act are based on the concept that the activities listed in art. 70 are monopolies performed by the municipality. For this reason they have the exclusive right to grant concession permission to third parties for performance of these activities.

The counter thesis is based on the "multifunctional competence of municipalities". Who, similarly to the Government, though limited in size, undertake the rights given by the Constitution and further confirmed by the law to carry out the local government in accordance with Art.136, paragraph 1 of the Constitution of Bulgaria. Because the Municipality as a legal person is subject to civil law (Art. 136, paragraph 3 of the Constitution), it therefore has the ability to be an independent and equal holder of rights and obligations. Just as other participants in the economic market, the municipality, being a holder of authority, is called by the Constitution to perform activities only allowed it, through the local government and local administration authorities. The main purpose of these municipal activities is the permanent satisfaction of general needs of the population of the municipality.

The general conclusions from the legal characteristics of a "municipal concession", especially where permission for activity is concerned, do not support a definition which is clear both in theory and in practice. Certainly, the most important arguments in these disputes are derived from the Judgments of the Constitutional Court, but the Court may only rule within the area of the inquiry, and the purpose of the judgments is not to replace missing or unclear legal norms. For instance the appeal on "the constitutionality" on Art. 5 of the Concessions Act, covered the compliance with the Constitution and ruled on the last item, "and other activities, for which state monopoly is established by law", and was not related with the permissibility for "transportation of energy resources", covered by Art.5, item 1.

As an expert legal opinion, we recommend principally that the concession is a legal form, with which the municipality may grant rights for gasification.

In the agreement for granting a concession it is very important to cover, as precisely as possible, the individual features of the subject of the concession. The first characteristic is the type of the concession being granted. In this case, it is a mixed concession. This statements is made on the grounds of the fact that as a result of granting the permission to the Concessionaire to perform gasification, the subject of the concession, he acquires a specific right of use of sites - public municipal property, related to the activity. Some of this would include, existing metering stations, pressure reduction stations, pipelines (if they have been built and are utilizable). Others would be sites that the Concessionaire will build as part of performing his obligations under the agreement for building and maintenance of the infrastructure, necessary for performance of the concession activities. Due to the peculiarity that these sites, some of which may not exist at the moment of signing of the concession agreement, the right to use them may be challenged from a legal point of view. Because of this possibility of challenge, the right of the Concessionaire to use sites constructed during the concession performance is reinforced and introduced in Chapter III "Rights and Obligations of the Parties", since it is fundamental to the performance of the activities under the concession.

The second characteristic feature of the concession is the territory on which it is to apply. The general definition "on the territory of X municipality" is acceptable if it is assumed that it includes the whole territory of the respective municipality in accordance with the "Uniform

Territorial Plan of the Republic of Bulgaria". There are two reasons for which we have chosen the exact territorial scope of the concession on a map attached to the agreement. The first is the importance of this feature for the Concessionaire, who will require maximum definitiveness and precision of this area. The second reason is the eventual need to exclude from the concession, industrial consumers who are supplied with gas through agreements with Bulgargas.

In the definition of "gasification" the end users of gas are given as public, administrative, households and industrial enterprises. The granting of unrestricted service of gas supply in the territory is desired by local gas distributors and enhances the value of the concession. However if there are certain limitations on the consumers that can be serviced by the Concessionaire, they must be listed in the Agreement. In developing the Model Agreement a services limitation was imposed by conditioning the "right to supply" in Chapter III Rights and Obligations of Parties.

When defining the subject of the concession it is essential to note the type of ownership of the concession sites, particularly those built in the performance of the concession agreement by and at the expense of the Concessionaire. The newly built sites shall be public municipal property, and this should be clearly stated.

An interesting issue is the ownership of the sites, which have to be built on private land. Art. 63, item 2 of the Act for Territorial and Town Planning provides that real estate shall be expropriated in accordance with enacted construction and regulation plans for gasification to the benefit of the municipality. This rule shall be applied for the route of the gas distribution network.

Other possibilities for expropriation of private property are covered in Chapter III "Town Development", Chapter II "Heating and Gas Supply", and Art. 160-170 of the Regulations for the Application of the Act for Territorial and Town Planning. In practice other solutions related to establishing the right of underground construction on private property for the benefit of the municipality are known under Art. 66 paragraph 3 of the Property Act. Thus within this framework of law the principle that the gas distribution network will have one owner, the municipality, is established.

With regard to the individual service branches of the gas distribution network, which have to pass through some one's private property to connect service, Art. 210 of the regulations for the Application of the Act for Territorial and Town Planning, provides a specific method for settlement of claims with property owners. The law requires that the owners be obligated to accept limitation on their right of ownership, related to the construction and operation of the service branch. The owner shall be compensated at the expense of the person to whose benefit the service branch is built - Art. 210 paragraph 3.

The permission and the concession for specific right of use are, in their essence, a factual mixture, comprising two resolutions of the Municipal Council which are, by nature, administrative acts with authoritative nature and one obligation agreement.

Chapter II – Term of the Agreement

This Chapter of the Agreement is determined for the most part by present law. The Act for Municipal Property now states a concession may be as long as fifteen years. This term could be extended by a decision of the municipal council to a term that does not exceed twenty-five years. There is momentum to amend the Act to allow a term of thirty-five years. In all cases the term is expressed as a maximum term. From the view point of the Concessionaire the longer the term the better. It allows a longer period to recover its investment that becomes municipal property, and it provides for a longer period of continued business and an incentive to take on the risks related with a concession operation. However within the allowable maximum term the municipal council can pick any length it deems suitable to its needs.

The term in the Model Concession Agreement is stated as fifteen. The provision for extension is included, along with a required notification of desire to extend within one year of the scheduled date of termination. The Model Agreement further provides a mechanism to respond to any amendments to the Act for Municipal Property that would permit a longer concession term.

It should be noted that the municipal council is not restricted by the Act for Municipal Property if it wishes to extend the agreement to the maximum allowable term, twenty-five years, before the expiration date of the first fifteen years. The Municipality could use an earlier extension as an incentive for an accelerated construction program, or exceptional performance by the Concessionaire.

Included in Chapter II of the Model Agreement is a statement of the right of preference the Concessionaire is afforded in any future tender for this concession. This preference granted in Art. 68 paragraph 3 of the Act provides that under equal conditions in a tender for the present concession activity, the present concessionaire would be declared the winner. This is a valuable asset to the concessionaire and he should insist on its declaration in the agreement.

Chapter III - Rights and Obligations of the Parties

Traditionally, it is the rule in Bulgarian contractual law that the basic rights and obligations of the parties in an agreement should be stated in a chapter with the same title. Rights and obligations can also be defined in other parts of the agreement; for example in the chapter “Subject of the Agreement”, where the obligations of the parties are generally defined. In

practice, many of the texts in an agreement settle some right or impose an obligation on one or both of the parties.

The chapter "Rights and Obligations of the parties" contains the formulations of the basic obligations that the parties should perform in order to accomplish the aim of the agreement. The text from this chapter, as well as the text in the "Subject" of the agreement, contain its essence. They determine the legal characteristic of the agreement and its type. The concession contract is certainly complex. Its contents are definitely commercial, but it also contains an important peculiarity, the composition of its origin - an authoritative statement of an administrative body (the Decision of the Municipal Council for a concession), and then a contract is negotiated.

Art. 25 of the Regulations for the Implement of the Act for Municipal Property explicitly stated that the contents of the Concession agreement include the parties' rights and obligations in the agreement as well as a list of other obligatory elements that have to be in the contract. Besides these obligatory contents, the law enables the formulation of other rights and obligations, mutually agreed upon, that can facilitate the implementation of the Concession agreement. Other additional text can be considered that clarifies actions of the parties. The importance of this chapter result in a considerable more Articles (30 – 31) compared to the other parts of the agreement. This underlines the need for a clear understanding of the respective rights and obligations critical to the implementation of the goal of the Concession agreement of providing for a qualitative, accessible and safe service to supply natural gas to the final consumer.

Generally the Chapter "Rights and Obligations of Parties" is divided into two parts, comprising the rights and the corresponding obligations of each party. Due to the complex characteristics of the gas supply and distribution concession the structure of this chapter has been further divided. The section of the chapter for each party has been subdivided into the rights and obligations related to the use of the gas system and to the permission to provide gas to the municipality.

Section 1 "Rights and Obligations of the Concessionaire" is related to the rights of the Concessionaire in the operation of the gas distribution system. The two articles listed are extensions of the subject of the concession, granting permission for performance of activities, and awarding a specific right of use of sites, public municipal property. To carry out the intent of the agreement, gas supply and distribution activities, the Concessionaire is awarded the exclusive rights to construct the necessary network and facilities. This avoids possible complications could arise in case of already existing facilities or facilities under construction by third parties.

The fact that infrastructure built by the Concessionaire becomes public municipal property leads to the need for Art. 6, awarding a specific right of use of the facilities built in execution of the agreement. The legal requirement for this article is to establish of a limited property right

of use of a site, taking into account the fact that the objects concerned do not presently exist, but will be constructed in the future. Without this Article, from a legal viewpoint, this could be a concern. This guarantees unhindered use of this network in performing gasification activities.

The rights of the Concessionaire to supply natural gas to the end-users, is established by the exclusive right to supply all end-users in the territory of the municipality. Any exceptions to this right must be listed in an attachment, Appendix 2.

The right of the Concessionaire to use the machinery and equipment necessary for natural gas supply and to carry out business relations with customers is also supported in the "Subject" of the Concession agreement. In regards to relations with customers, the model agreement stipulates only the possibility that the Concessionaire can terminate the supply of natural gas with customers who are remiss in payment. Not doing so is not considered non-fulfillment of the concession agreement.

The Concessionaire maintains his right to arrange relations with customers through a contract for supply. It is recommended that the municipality approve the form and content of contracts to accomplish this. The careful structure of this contract for supply should protect the interests of the citizens of the municipality, and further the goal of beneficial use of municipal property, the principle embedded in a concession.

Because the right of the Concessionaire to sign subcontractor's agreements with third parties does not flow logically from the above-mentioned rights, it is stated separately. It is important to point out that the Concessionaire cannot transfer any of his rights under the concession agreement to third parties and is liable for non-fulfillment and faults of subcontractors.

In presenting the obligations of the Concessionaire it is appropriate to group them in the same manner as the rights. The core of the obligations is concerned with the performance of the aims of the concession. That is to set up of a gasification network, provide its maintenance and quality operation, provide non-discriminating gas supply to the customer, secure revenue for the municipality and maintain control of the performance of the concession.

The first group of obligations relates to the establishment of the gasification network and is directly connected with the proposal submitted to the competitive bidding for selection of Concessionaire. The selection of his proposal binds him to carry out the construction work for the network, its maintenance, and its expansion in size and capacity. The proposed semi-annual reporting period is conditional. The determination of the reporting period should take into account the schedule of the Concessionaire in the execution of the obligations related to the concession. The importance of the obligation of the Concessionaire to report requires that a reasonable period of time be fixed and that this period be complied with.

The obligations of the Concessionaire to the customers are next stipulated in the model agreement. They require the Concessionaire to connect every user, who complies with the requirements in the Concessionaire contract for supply, a document approved by the municipality, as well as with the current law and regulations on gasification activities.

The maintenance of the quality of service rendered is also an important obligation of the Concessionaire and it is directly related to his obligation to maintain the infrastructure of the gas supply system in an acceptable condition. A strong concern for public awareness requires that the Concessionaire inform in advance the public for activities (repairs, excavation works, preventive maintenance, etc.) that may influence directly or hinder the normal course of life in the populated area concerned.

Article 18 Paragraph 1 and 2 of the model agreement, obligates the present Concessionaire, after the Contract has terminated, to operate the gas supply network during the negotiation of a successor agreement, but not longer than six months. This guarantees that the supply of gas shall not be interrupted after the termination of this agreement. The interest of the municipality, gas supply, for its citizens is protected.

In Article 19 through 24 of the model agreement are obligations of the Concessionaire that are basic but not covered in the previous Articles. The Act for Municipal property and its Rule for Implementation require some. Such are the obligations to pay the concession fee as stipulated in the agreement, or to adhere to the provisions of the Environment Act for areas or sites protected by law. Article 24 is aimed at maintaining gas supply to customers in case of force major or guilty non-performance and is provided in protect the public interest. The obligation to insure the concession sites is a reflection of Art. 9 paragraph 3 of MPA, requiring the approval of the Municipality of the insurance company, the amount of the premium and the conditions of the insurance in order to protect its interests. The rights of the municipality under the agreement accrue from its position as the party granting permission for carrying out an activity and the right of use of public municipal property. The right to receive concession fees represents the right to receive compensation from the Concessionaire for the grant of economic opportunity. The right of ownership of sites and infrastructure of the gas network is contained in the Act for Municipal Property.

The obligations of the municipality are mainly aimed at facilitating the performance of the activities of the Concessionaire. In this respect the municipality is obliged to guarantee the exclusivity of the rights of the Concessionaire on the territory concerned, and not in any way hinder the activities of the Concessionaire and to offer assistance in obtaining the necessary construction and other permissions and licenses.

An important obligation of the municipality is contained in Art. 33 of the model agreement, stating that the municipality is to render legal protection of the Concessionaire against actions or claims of third parties impeding the activities granted under the concession.

The length of term of a concession agreement for gasification requires the necessity to achieve maximum clarity and full understanding from both parties on the rights and obligations under the agreement. Realizing that changes may occur in the authorized persons or personnel of both contracting parties, it should be clearly stated that the concession agreement, in full, defines the relationship between the parties to it. Amendments to the agreement can arise only according to previously defined procedures, or in case of changes in the imperative regulations concerning the legal regulation on concessions.

Chapter IV - Price of Natural Gas

The price of natural gas for the customers in Bulgaria is regulated on a central governmental level. Since 1995 the agencies dealing with this activity have been the following:

The Price Act appoints as an agency on pricing the National Commission on Prices within the Council of Ministers (later renamed National Commission on Trade with the Ministry of Trade and Tourism).

The National Commission on Prices (NCP) is assigned the task of submit to the Council of Ministers (CM) proposals for fixing the limit prices and the limit for sale surplus charges. These are calculated according to an approved methodology. In cases where necessary it is provided that the Council of Ministers may set higher limit prices and/or sale surplus charges than the level defined by the methodology.

The National Commission on Prices at the CM is assigned the task to announce in the public media the prices adopted by a decision of the CM. The amendments of the Price Act (SG 64 of 1997) have reorganized the NCP, along with the establishment of the State Public Commission on Prices of Energy, within the CM into a specialized body on pricing within the Ministry of Trade And Tourism,

According Art. 13 Paragraph 1 of the Price Act the relevant ministers, heads of agencies and the regional governors, in compliance with their respective authorities, may propose to the Council of Ministers, after discussion with the specialized bodies on prices, the introduction of measures for price regulation and their changes.

The Council of Ministers has also authority in regard to carrying out the state's regulation of prices. The authority of the CM evolves from both the Price Act and the Competition Protection Act.

The reform in the current manner of price formation is a widely discussed issue at this moment. Various draft revisions have been developed and are now under review in the

various governmental agencies responsible for price policy. As of this date no final decision on that issue has been reached.

Because of the present policy of pricing of natural gas, the main objective of Chapter 4 of the Model Agreement "Price of Natural Gas" is to preserve the right of the Municipality to play a defining role in the formation of this price if and when it is decentralized. By maintaining this right the municipality will have the opportunity in the future to be able to protect the interests of its citizens from the possibilities for price abuse by the Concessionaire with a granted exclusive right that is a monopoly for the municipal's territory.

It is evident that for the concession to be successful the price of gas has to reflect the interests of the contracting parties and of the end-users. Naturally the economic interests of the Concessionaire dictate the introduction of higher price of gas. On the contrary, the interests of the Municipality are in line with the interest of the users and looking for a lower price for the service.

Chapter V – Concession Fees

The concession fee is a manifestation of the commercial character of the concession agreement. It represents a payment, made by one of the parties, in return for the grant of the exclusive right of carrying out an activity, gasification of a given territory. But the specific character of the concession agreement requires, in establishing the fee the necessity, to consider some other circumstances besides the equality of the fee and the economic opportunity granted, as would be the case in an ordinary obligation contract. These considerations could include the interests of the customers, because an unreasonably high fee could be reflected in higher service prices. The municipality's priority aim is that the concession is successful and after that, additional revenue as fees.

The concession fee is negotiated between the contracting parties. It must be pointed out that there is not a regulatory methodology for the formation of the royalty. However the prevailing practice in Bulgaria is a large sum at or near the Concession contract signing and a annual periodic payment. The large sum is recommended to cover the expenses of the Municipality in conducting the procedure for the grant of the concession, feasibility studies, legal and social analyses, the preparation of the bidding documentation, the conducting of the bidding itself, etc. Considering the financial investment of the Concessionaire for the construction and development of the gasification network, a request for an inordinately large sum at this time can scare off prospective investors. It might be more feasible if the large sum could be paid in two or more installments within the first years of the concession. The emphasis here is that the aim of this payment is to cover the expenses for the procedure for the awarding of the concession. This frees up the Concessionaire to concentrate his main capital resources in investments related to the concession.

The annual periodic payment is the actual financial gain of the Municipality from the concession. There are several opinions concerning when the annual payments have to start. The prevailing opinion is that the Concessionaire should be free from the obligation to pay annual periodic payments during the first years of the concession. In the Model Agreement this initial grace period is two years, but it is quite likely the parties could reach some other agreement on the issue.

The methodology for the calculation of the annual periodic payments of the concession fee is also a disputable issue. Once adopted it is an integral part of the agreement.

One possibility is the payment could be a percentage of the profit of the Concessionaire. This option implicitly poses a serious problem of a possible contradiction of interests on the municipality level. In such a manner the Municipality becomes a shareholder with the Concessionaire under the concession. Such an arrangement could compromise the interests of the inhabitants of the municipality. It should also be noted that the fee is due for the exclusive right and, is not directly connected with the profits of the Concessionaire.

Another possibility is to establish a fixed amount per year, or some other period of time, that is indexed by a percentage of the profit of the Concessionaire. Though it is recommended that this percentage be small, it does provide a check against excess profit for the Concessionaire, while not exposing the municipality to the dangers of conflict of interest.

A technique used in some western municipalities is to use the payment of the fee to fund some other type of service rendered by the municipality, health recovery programs, programs for elderly people, and activities for the benefit of the population of the municipality. In these cases, the cost of these services will be funded from the fee payment.

The Municipal Council's request for the concession tender should include the methodology it is proposing for the concession fee. Of crucial importance to the determination of the method for calculation of the fee, should be the financial and economic analysis prepared for the council prior to its concession decision.

It has to be noted that the overdue fee payments accumulate interest in accordance with the state statutory interest rates, and for that reason it is not explicitly stated in the model agreement. If the parties to agree to a rate different from the statutory rate due on late payments, this should become a specific clause in the agreement.

In conclusion, it has to be emphasized that the fee payment should not be considered "a golden mine", a source of large income for the municipality. The gas customers are those who are going to pay for such an erroneous understanding. The main aim should be a successful concession. Already centralized price control is a negative incentive on prospective investors

and it is not recommended to increase that risk in this sector by fixing too high concession fees.

Chapter VI – Guarantees for Performance of Obligations

The bonds for performance of the obligations stipulated in the concession agreement are obligatory. The mandatory provision contained in Chapter 8, Art. 72, paragraph 5, of the Act for Municipal Property, require the defining of the type and value of these bonds to be in the Decision of the Municipal Council authorizing the tender for the choice of the concessionaire. In practice, on reviewing other agreements, the clauses in that decision referring to obligation bonds is used in this chapter of the subsequent concession agreement.

Bonds are not required to guarantee all the obligations of the Concessionaire. In the model agreement only two require the issuance of bonds, the payment of the concession fee, and the fulfillment of the investment plan for the construction of the gasification network. The non-performance of the other obligations stipulated in the agreement is addressed in the next chapter of the agreement.

It should be noted that the Model Agreement represents the present practice of municipalities on this matter. Some other possibilities provided for in the Bulgarian law could be considered, including a bill of exchange or a promissory note.

The proposed method is a unconditional bank guarantee by a first class Bulgarian bank in the name of the municipality and paid by the Concessionaire to guarantee the payments of the fee. A second bond of the same quality, to guarantee the completion of system construction is usually established as a percentage of the investment program. It is important to remember that these guarantees are to reimburse the municipality for losses due to non-performance of the two particular obligations and should not be considered punitive. In setting the value of the guarantees a realistic estimate of the loss potential should be considered.

Chapter VII – Non- Performance of Obligations

Chapter VII of the Model Agreement is based on the traditional practice of Bulgarian Contractual Law, particularly Article 40.

This chapter lists eight reasons of non-performance in which the municipality may unilaterally terminate the concession agreement. These conditions are based on the non-performance of the concessionaire's most important obligations. The eight reasons are a reflection the obligations of the concessionaire, whose performance would measure the success or failure of the concession. In this way, besides being a sanction, they are an effort to guarantee the fulfillment of the basic promises of the Concessionaire.

The termination of the agreement, with all the negative consequences resulting from it, is a sanction imposed for significant non-performance. For partial non-performance of the obligations, less serious sanctions may be imposed. The technical and economic character of these negotiations precludes further legal interpretation. The definition of this level of non-performance, and the corresponding penalties can be negotiated by the respective specialists of the two parties and added as an attachment to the agreement. They could include the “General Supply Conditions” and a “List of penalties for inadequate Performance”.

The importance of the Municipality’s obligation to provide legal protection to the Concessionaire’s right of concession grant, stated in Article 34 of the Model Agreement, to the financial security of the Concessionaire is the reason why its non-performance is a condition for the Concessionaire to unilaterally terminate the contract.

Chapter VIII - Termination of Agreement

The Chapter “Termination of Agreement” comprises the grounds for non-unilateral termination of the agreement. The conditions for termination contained in Articles 39 and 40 of the previous chapter are included under the reference in paragraph 7 of Art.42 of this chapter.

The contents of the chapter of the agreement are required in Art.75 of the Act for Municipal Property and Art.26 (1) of the Regulations for the Implementation of the Municipal Property Act.

Paragraph 2 and paragraph 3 of Art.45 protects the ability of the Concessionaire to recover its investment when the contract is terminated ahead of time. This is in accordance with Article 75 of the Act for Municipal Property.

The Model Agreement provides for the preparation of a Protocol on Termination by the contracting parties. Its aim is an orderly process of termination and of the settling the property relations at the time of termination. The disputes on the termination or on the protocol will be settled in the manner the parties agreed upon in Chapter IX “Disputes and Applicable Law”.

Chapter IX - Disputes and Applicable Law

Disputes, which could arise between the parties, are to be settled by mutual agreement. Considering the long-term character of the concession agreement, such disagreements and disputes will inevitably arise and it is recommended that the parties effectively communicate on all issues concerning the concession.

If situations or issues not included in the agreement arise, the regulations of the Bulgarian Material Law will be applied.

The use of the Arbitrary Court of the Bulgarian Chamber of Commerce and Industry as arbitrator is suggested as a more timely and economic means to adjudicate disputes than the Bulgarian Court

Chapter X - Final Provisions

This chapter of the Model Agreement includes two clauses. The first is a mechanism to resolve circumstances of performance that the parties could not have predicted or foreseen. It provides for the Court, upon request of either party, to intervene and, under Art. 307 of the Commercial Act change or terminate the agreement.

The second clause states the commitment of both parties of the agreement to the fulfillment of different programs that finance the service of gas supply to low-income or other households needing gas supply.

APPENDIX

LAWS AND REGULATIONS PERTAINING TO A CONCESSION AGREEMENT

Primary Legislation

Protection of Farmland Act - (Promulgated in the State Gazette, issue 35 of 241996)

State Budgets Act : The State Budget Act of the Republic of Bulgaria Act for 1995 (Prom. SG, issue 46/19.05.1995; Decision No. 17/3.10.1995 of the Constitutional Court of the Republic of Bulgaria - issue 93/20.10.1995, amended and supplemented, issue 1/2.01.1996), The State Budget Act of the Republic of Bulgaria Act for 1995 (Prom. SG issue 16/23.02.1996, amen. and suppl., issues 28/2.04.1996, 46/29.05.1996, in force as of 29.05.1996, issue 68/9.08.1996, issue 79/17.09.1996; Decision No. 17/3.10.1996 of the Constitutional court of the Republic of Bulgaria - issue 88/18.10.1996; amen. And suppl., issue 108./20.12.1996, in force as of 20.12.1996, amen., issue 109/27.12.1996; Decision No. 22 10.12.1996 of the Constitutional Court of the Republic of Bulgaria - issue 1/3.01.1997), The State Budget Act of the Republic of Bulgaria Act for 1997 (Prom. SG, issue 52/1.07.1997, in force as of 1.07.1997), The State Budget Act of the Republic of Bulgaria Act for 1998 (Prom, SG issue 123/22.12.1997, in force as of 1.01.1998, suppl. issue 71/ 23.06.1998).

Municipal Property Act (Prom. SG, issue 44/21.05.1996, in force as of 1.06.1996, amen., issue 104/6.12.1996, in force as of 6.01.1997, issue 55/7.07.1997, in force as of 11.07.1997, amen. and suppl., issue 22/24.02.1998) - Art. 2, para 1, sub-para 7 and para 4; Articles 3, 7, 9, 12, 21, and Articles 67-75.

State Property Act (Prom. SG, issue 44/21.05.1996, in force as of 1.06.1996, amen., issue 104/6.12.1996, in force as of 6.01.1997, amen. and suppl., issue 55/11.07.1997, in force as of 11.07.1997, suppl., issue 61/1.08.1997, amen., issue 117/10.12.1997, in force as of 1.01.1998) - Art. 3, subpara 5

Property Act (Prom. SG, issue 92/1951, last amendment- SG, issue 100/1997) - Articles 6, 7 and 92

Concessions Act - (Prom. SG, issue 92/17.10.1995; Decision N 2 of the Constitutional Court of the republic of Bulgaria of 6.02.1996 - issue 16/23.02.1996; amen., issue 44/21.05.1996, in force as of 1.06.1996, amen. and suppl., issue 61/1.08.1997, suppl., issue 123/22.12.1997) - §1 of the Transitional and Final Provisions

Companies Act (Prom. SG, issue 48/18.06.1991, in force as of 1.07.1991, amen., issue 25/27.03.1992, amen. and suppl., issue 61/16.07.1993, issue 103/7.12.1993, issue 63/5.08.1994, amen., issue 63/14.07.1995, amen. and suppl., issue 42/15.05.1996, in force as of 15.05.1996, amen., issue 59/12.07.1996, in force as of 1.07.1996, amen. and suppl., issue 83/1.10.1996, in force as of 1.11.1996, amen., issue 86/11.10.1996, in force as of 1.01.1997, issue 104/6.12.1996, in force as of 6.01.1997, issue 58/22.07.1997, in force as of 22.07.1997, amen. and suppl., issue 100/31.10.1997, issue 124/23.12.1997, in force as of 1.03.1998, suppl., issue 39/7.04.1998, issue 52/8.05.1998, amen. and suppl., issue 70/19.06.1998)

Obligations and Contracts Act (Prom SG, issue 275/22.11.1950, in force as of 1.01.1951, modified, *Izvestiya*, issue 2/5.12.1950, amen., issue 69/28.08.1951, issue 92/7.11.1952, issue 9/30.01.1962, SG, issue 80/5.10.1962, issue 85/1.11.1963, issue 27/3.04.1973, issue 16/25.02.1977, issue 28/9.04.1982, issue 30/13.04.1990, amen. and suppl., issue 12/12.02.1993, amen., issue 56/29.06.1993, amen. and suppl., issue 83/1.10.1996, in force as of 1.11.1996, amen., issue 104/6.12.1996, in force as of 6.01.1997)

Local Government and Local Administration Act (Prom SG, issue 77/1991, amen., issues 24, 49 and 65/1995, issue 90/1996 and issue 122/1997) - §7 of the Transitional and Final Provisions; Art. 11

Territorial and Settlement Structure Act (Prom SG, issue 29/1973, last amendment - issue 79/1998) - Art. 63

Constitution of the Republic of Bulgaria (Prom SG, issue 56/1991) - Art. 17, paras 2, 4 and 5; 18, paras 4, 19, 136, 140

Secondary Legislation

Regulations on the Application of the Territorial and Settlement Structure Act (Prom SG, issue 62/1973, last amendment - issue 6/1998) - Art. 182, Art. 210

Ordinance on the Formation and Application of Marginal Natural Gas Rates for the Domestic Market (Adopted by Decree of the Council of Ministers No. 233/20.05.1997, Prom SG, issue 42/27.05.1997, in force as of 27.05.1997, amen., issue 57/18.07.1997, in force as of 14.07.1997, issue 100/31.10.1997, in force as of 8.08.1997, issue 64/5.06.1998, in force as of 1.06.1998)

Ordinance No. 1 of 13.02.1998 for the Terms and Procedures for Establishing Temporary Norms for the Discharge of Harmful Substances in the Atmosphere by Immovable Operating Facilities (Issued by the Minister for Environment and Waters, Prom SG, issue 51/6.05.1998)

Ordinance No. 2 of 19.02.1998 on the Norms for the Release, by Immovable Sources, into the Atmosphere of permissible Discharges (Concentrations in the Exhaust Gases) of Harmful Substances, (Issued by the Minister for Environment and Waters, the Minister for Industry, the Minister for Regional development and Capital Improvement and the Minister for Health, Prom SG, issue 51/6.05.1998)

Ordinance No. 7 of 25.05.1992 for the Hygienic Requirements for Health Protection of the Environment in Settlements (Issued by the Minister for Health, Prom SG, issue 46/4.06.1992, amen. and suppl., issue 46/7.06.1994, issue 89/22.10.1996, amen., issue 101/26.11.1996, amen. and suppl., issue 101/4.11.1997)

Ordinance No. 15 for Fire Safety During Operations Involving Fire Handling (Issued by the Minister for Internal Affairs, Prom SG, issue 95/4.12.1981)

Ordinance for the Terms and Procedures for Registration, and the Permission to Export and Import of Goods (Attachment No. 7 to Art. 9 of Decree of the Council of Ministers No. 493/23.12.1997, Prom SG, issue 126/30.12.1997, in force as of 1.01.1998, suppl., issue 2/7.01.1998, in force as of 7.01.1998)

Decree No. 194/6.10.1995 of the Council of Ministers for the adoption of Regulations on the application of the Prices Act; for setting of fixed prices of electrical power; for an Ordinance for the application of the fixed prices on electrical power; for setting of fixed prices of heating power; for an Ordinance for the application of fixed prices of heating power; for setting of fixed prices of locally produced coal and briquettes for economic needs; for setting of marginal commercial surcharges on locally produced coal and briquettes for household consumption; for an electrical power, heating power and coal and briquettes pricing methodology for economic needs; for setting of marginal prices of liquid fuels and natural gas and marginal commercial surcharges for October 1995; for setting of fixed prices of domestic and international postal and telecommunications services; for setting of minimum purchase prices of farming products; for adoption of a Water Pricing Methodology (Title suppl. - SG, issue 40/1996, amen., issue 37/1997) - (Prom., SG, issue 91/13.10.1995, in force as of 6.10.1995, suppl., issue 36/26.04.1996, in force as of 1.05.1996, modified and suppl., issue 40/10.05.1996, amen., issue 58/9.07.1996, in force as of 1.07.1996, issue 21/11.03.1997, in force as of 1.03.1997, amen. and suppl., issue 37/9.05.1997, in force as of 9.05.1997)

Decree No. 233/20.05.1997 of the Council of Ministers for the Adoption of an Ordinance on the Formation and Application of Marginal Natural Gas Rates for the Domestic Market (Prom. SG, issue 42/27.05.1997, in force as of 27.05.1997, amen., issue 100/31.10.1997, in force as of 8.08.1997, issue 64/5.06.1998, in force as of 1.06.1998)

Decree No. 242/14.10.1994 of the Council of Ministers on the Formation of Marginal Prices for Liquid Fuels, , Hydrocarbon Liquefied Gas and Natural Gas (Prom. SG, issue 88/26.10.1994, in force as of 26.10.1994, amen., issue 49/30.05.1995, in force as of 1.06.1995)

Decree No. 392/22.10.1997 of the Council of Ministers for Transformation of the National Pricing Committee with the Council of Ministry to a National Trade Committee with the Ministry of Trade and Tourism (Prom. SG, issue 100/31.10.1997, in force as of 8.08.1997)

Regulations on the Application of the Protection of Farmland Act (Prom SG, issue 84/1996, amen, issue 100/1997)

Decree No. 333/20.08.1997 of the Council of Ministers on the Amendment and Supplementation of Decree No. 194/1995 of the Council of Ministers on the adoption of Regulations on the Application of the Prices Act; for setting of fixed prices on electrical power; for an Ordinance on the application of the fixed prices on electrical power; for setting of fixed prices of heating power; for an Ordinance on the application of fixed prices of heating power; for setting of fixed prices of locally produced coal and briquettes for economic needs; for setting of marginal commercial surcharges on locally produced coal and briquettes for household consumption; for an electrical power, heating power and coal and briquettes pricing methodology for economic needs; for setting of marginal prices of liquid fuels and natural gas and marginal commercial surcharges for October 1995; for setting of fixed prices of domestic and international postal and telecommunications services; for setting of minimum purchase prices of farming products - adoption of new minimum purchase prices for the 1997 harvest; for adoption of a Water Pricing Methodology (Prom SG, issue 91/1995; amen. and suppl., issues 16, 29, 36 and 40/1996; mod., issue 40/1996; amen. and suppl., issues 55, 57, 58, 72 and 101/1996 and issues 13, 17, 18, 21, 23, 27, 29, 36, 37, 42, 51 and 58/1997)

Decree No. 39/8.03.1996 of the Council of Ministers for Setting of a Customs Dutiable Value of goods, Imported into the Republic of Bulgaria (Prom. SG, issue 22/15.03.1996, amen., issue 37/9.05.1997, in force as of 9.05.1997)

Decree No. 118/30.05.1996 of the Council of Ministers for the Introduction of a Temporary Fee on the Import into the Republic of Bulgaria by Legal Persons and Sole Proprietor Traders (Prom. SG, issue 48/4.06.1996, in force as of 4.06.1996, suppl., issue 49/7.06.1996, in force as of 4.06.1996)

Decree No. 268/29.10.1996 of the Council of Ministers on the Regime for the Import and Transit Transport of Waste and Hazardous Substances (Prom. SG, issue 94/5.11.1996, in force as of 5.01.1997, modified, issue 3/10.01.1997, amen., issue 54/8.07.1997, in force as of 1.07.1997, suppl., issue 126/30.12.1997, in force as of 1.01.1998)

Decree No. 38/17.05.1977 of the Council of Ministers on the Protection of Cross-Country Petrol Pipelines, Petrol Product Pipelines, Gas Pipelines, their Diversion- and Linear Facilities within the Territory of the People's Republic of Bulgaria (Title amen. - SG, issue 56/1979) (Prom SG, issue 47/17.06.1977, amen. and suppl., issue 56/17.07.1979, issue 85/4.11.1988)

Order No. 171/6.07.1995 Concerning State Control over Imported and Exported Goods (Issued by the Minister for Finance, Minister for Health, Minister of Agriculture and Food Industry and the Chairman of the Standardization and Metrology Committee, Prom SG, issue 74/22.08.1995)

Order No. 57/16.03.1994 Concerning the Determining of Nomenclatures for Machinery, Devices and Installations (Issued by the Chairman of the Standardization and Metrology Committee, Prom SG, issue 29/5.04.1994)

Tariff No. 11 on Fees, Collected within the System of the Standardization and Metrology Committee under the State Fees Act (Adopted by Decree of the Council of Ministers No. 356/24.09.1997, Prom SG, issue 88/3.10.1997)

Minimum purchase prices for agricultural products from the 1997 harvest (Title suppl. - SG, issue 16/1996, amen., issue 51/1997)

Program on the Privatization of State Enterprises in 1998 (Adopted by a Decision of the National Assembly/28.11.1997, Prom SG, issue 116/9.12.1997)

Regulations on the Application of the Concessions Act (Prom SG, issue 111/1995, amen., issue 15/1997 and issue 39/1998)

Regulations on the Application of the Municipal Property Act (Prom SG, issue 82/1996, amen., issues 24 and 62/1997 and issue 29/1998) - Chapter Three

Regulations on the Application of the Prices Act

Ordinance No. 3/20.02.1995 on the Design of Gas Supply Systems for the Settlements and Gas Installations in Buildings, Operating with Natural Gas (Issued by the Minister for Territorial Development and Construction, prom. SG, issue 24/14.03.1995)

Ordinance No. 4/20.02.1995 on the Control and Acceptance of Systems for Gas Supply to Settlements and gas Installations in Buildings, Operating with Natural Gas (Issued by the Minister for Territorial Development and Construction, prom. SG, issue 24/14.03.1995)

Ordinance on the Granting of Municipal Concessions, adopted by Decision N 153 under minutes of meeting N 19/05.03.1997 of the Stara Zagora municipal council, in force as of 13.03.1997

Ordinance on the Accumulation, Expenditure and Control over Resources in Environmental Protection Funds - (Adopted by Decree of the Council of Ministers No. 168/17.08.1995, Prom SG, issue 75/25.08.1995, in force as of 25.08.1995, amen. and suppl., issue 72/23.08.1996, in force as of 23.08.1996, amen., issue 106/13.12.1996, in force as of 28.12.1996, issue 42/ 27.05.1997, amen., issue 54/8.07.1997, in force as of 1.07.1997)

Attachment No. 1 to Art 1 of Decree of the Council of Ministers No. 194/6.10.1995, Prom SG, issue 91/ 13.10.1995, in force as of 6.10.1995, mod., issue 93/20.10.1995, amen. and suppl., issue 16/23.02.1996, in force as of 23.02.1996, amen. and suppl., issue 36/26.04.1996, in force as of 1.05.1996, issue 57/5.07.1996, in force as of 1.07.1996, amen., issue 17/25.02.1997, in force as of 18.02.1997, issue 18/28.02.1997, in force as of 20.02.1997, issue 23/18.03.1997, in force as of 18.03.1997, amen. and suppl., issue 29/8.04.1997, in force as of 1.04.1997, amen., issue 36/6.05.1997, in force as of 6.05.1997, amen. and suppl., issue 37/9.05.1997, in force as of 1.05.1997, issue 51/27.06.1997, in force as of 27.06.1997, issue 58/22.07.1997, in force as of 14.07.1997, amen., issue 94/17.10.1997, in force as of 9.10.1997, amen. and suppl., issue 100/31.10.1997, in force as of 8.08.1997, suppl., issue 101/4.11.1997, in force as of 28.10.1997, amen. and suppl., issue 76/3.07.1998, in force as of 1.07.1998

Attachment No. 12 to Art. 8 of Decree of the Council of Ministers No. 194/6.10.1995, prom. SG, issue 91/13.10.1995, in force as of 6.10.1995, amen., issue 16/23.02.1996, in force as of 23.02.1996, previous Attachment No. 11 - issue 36/26.04.1996, in force as of 1.05.1996, amen., issue 55/28.06.1996, in force as of 28.06.1996, issue 51/27.06.1997, in force as of 27.06.1997, issue 72/27.08.1997, in force as of 11.08.1997

International Acts

European Agreement on the Association Among European Communities and their Member-States on the one hand, and the Republic of Bulgaria, on the other (Ratified by an Act, adopted by the 36th National Assembly on 15.04.1993 - SG, issue 33/20.04.1993, in force as of 1.02.1995. The text of the agreement was promulgated as a separate publication of the State Gazette, issued on 25.05.1995 - SG, issue 61/7.07.1995)

International Convention Concerning the Economic Statistics and Minutes of Meeting Enclosed therewith (Ratified by Edict No. 2 of King Boris III of 27.06.1929 - SG, issue 114/1929 prom., SG, issue 114/1929, in force as of ... Issued in a Compendium of International Agreements of Bulgaria, vol II, 1994

**ANNEX B
WORKSHOP ON
MODEL CONCESSION AGREEMENT FOR NATURAL GAS**

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WORKSHOP ON MODEL CONCESSION AGREEMENT FOR NATURAL GAS

I. OBJECTIVE OF THE WORKSHOP

This project has provided other related tools addressing the subject of a concession agreement. In June 1998 a paper and workshop on concession agreements were prepared and presented to municipal staff and other interested observers in Stara Zagora. Under RFS 215B, a Model Concession Agreement for Natural Gas was prepared. That document was an outgrowth of the need and interest the earlier work had generated on this subject.

These workshop materials are prepared to assist in the dissemination of the concepts contained in the Model Agreement. They highlight legal questions and required content, as well as areas where the parties to the contract by mutual agreement can provide for the intent of the Municipal Property Act and the use of municipal property in a manner that is beneficial to the citizens of the municipality.

Since the workshop is built on the following deliverables that preceded it, a familiarity with these papers should be a primer to the workshop itself, or at least included in the data provided the attendees:

Considerations on the Content of a Concession Agreement under the Municipal Property Act

Model Concession Agreement for Natural Gas

It is further suggested the Municipal Property Act and the Regulations for its implementation be made available to all participants.

The workshop will discuss each Chapter of the Model Agreement, analyzing its legal foundation, explaining its relationship to existing legislation, and underlining areas where the municipality should consider obligation to its citizens.

It is not the intent of the Model Agreement or the workshop to eliminate the need for considerable input on the part of the contracting parties in a concession agreement. Rather, it is to provide the basic form of an agreement that can be validated with the addition of substantive matter related to the particular municipality and concession.

Though this Model Agreement and the corresponding workshop were prepared for natural gas, the legal and other principles are easily applied to the subject of other municipal concessions. It is hoped that the Local Government Initiative program will use this workshop as an added tool in providing for the beneficial use of the right to grant concessions provided to local government by the Municipal Property Act.

II. DISCUSSION SESSION TOPICS

Discussion and Question and Answer sessions of approximately a quarter of a hour will follow each presentation topic. This means of attendee participation is chosen to:

To reinforce and resolve questions on critical concepts of legal and technical nature while still fresh in the audience*s mind.

To build an understanding of the objectives of the Model Agreement in defining the concession it establishes.

To encourage and stimulate participation early on in the workshop.

In the presentation segments, the titles of the Chapters of the concession agreement provide the topics that walk the participants through the entire agreement. Each topic*s relation to the Municipal Property Act as well as the framework of Bulgarian law is discussed. The ability to use the Agreement to provide the municipality regulatory control in the management of the monopoly is demonstrated. The longevity of the agreement and the need to anticipate unforeseen circumstances is addressed in a legal context. The topics go beyond meeting the letter of the laws involved, and introduce examples of a number of innovations that are beneficial to all parties to the agreement. The presentation segments are:

Legal Foundation

Subject and Term of Concession

Price of Natural Gas and Concession Fees

Rights and Obligations of Parties

Performance – Guarantees and Penalties

Termination – Disputes – Final Provisions

Within the presentation segments, the following questions, concerns and concepts should be addressed, developed and understood by the participants:

What is the difference between a right to use, and a permit to perform?

Is natural gas supply a “state monopoly”?

What is meant by a “mixed concession”?

Does a municipality have jurisdiction over all property in its territory?

How can one “use” something not built?

What are municipal “activities”?

How does one deal with private property in a municipality?

Why is the length of the concession such a critical factor?

Why should a concessionaire get “preference” in future bids?

What is the municipality’s interest in pricing?

Should the municipality get as high a concession fee as possible?

Why are rights and obligations the essence of the Agreement?

Are all those rights and obligations required by Law?

Does the law say what kind of performance must be guaranteed?

Is termination the only penalty for non-performance?

What is a “termination protocol”

Why select a Court of Arbitration?

Why do final provisions seem to say the obvious?

III. PRESENTATION TECHNIQUES AND MATERIALS

The workshop materials are suitable for presentation to a broad spectrum of audiences. For any particular audience and setting, the presenter will have to introduce techniques that match the present setting and audience. The following suggestions have been successful with a wide range of audiences.

A high official of the sponsoring organization should open the workshop and introduce the team of presenters. Following this, a member of the presenting team should give an overview of the workshop purpose and format. He/she should review the workshop binder and explain its content. Next he/she requests each member of the audience to introduce themselves, their affiliation, and expected personnel results from the workshop. This “icebreaker” often results in a more free and open discussion during the remainder of the workshop.

The workshop binder should consist of the agenda, table of contents of the binder, copies of each overhead used in the presentation and an appendix containing excerpts from manuals, previous papers, and reports that illustrate the tools and nomenclature used during the workshop.

During the Discussion Sessions audience participation facilitation techniques should be followed including opening questions to members of the audience, asking individual opinions on the topic presented, and having other members of the presentation team pose questions. At the end of each Discussion Session the audience should be encouraged to pursue further discussion with the presenters at breaks or at the end of the workshop.

The use of Bulgarian language overheads as a means to display and transfer topical content, as well as to outline the relationship of existing law to the Model Agreement Chapters, will keep both the presenter and participant in focus. With English presenters this can be particularly helpful.

Consecutive translation of English-speaking presenters, at its best, has its drawbacks. As LGI's underlying objectives of strengthening capabilities at the local level take hold, English presentations should become less common, until then, an effort should be made to increase Bulgarian language presentation, with English speaking experts available for questions and topical expansion.

APPENDIX

SAMPLE AGENDA

Workshop On Model Concession Agreement For Natural Gas

- | | |
|----------|--|
| 9:00 AM | Welcome and Introductions |
| 9:15 AM | Workshop Format |
| 9:30 AM | Legal Foundation |
| 10:15 AM | Discussion, Questions & Answers |
| 10:30 AM | Coffee Break |
| 10:45 AM | Subject and Term of Agreement |
| 11:15 AM | Discussion, Questions & Answers |
| 11:30 AM | Price of Natural Gas and Concession Fees |
| 12:15 PM | Discussion, Questions & Answers |
| 12:30 PM | Lunch |
| 1:30 PM | Rights and Obligations of Parties |
| 2:15 PM | Discussion, Questions & Answers |
| 2:30 PM | Performance – Guarantees and Penalties |
| 3:00 PM | Discussion, Questions & Answers |
| 3:15 PM | Break |

3:30 PM Termination – Disputes – Final Provisions

4:00 PM Discussion, Questions & Answers

4:15 PM Summary and Closing Remarks

MODEL CONCESSION AGREEMENT

LEGAL FOUNDATION

Municipal Property Act (MPA)

Regulations for the Implementation of the MPA

Other

Constitution of the Republic of Bulgaria

Concession Act

State Property Act

Territorial and Settlement Structure Act

Miscellaneous Ordinances and Decrees

MODEL CONCESSION AGREEMENT

LEGAL FOUNDATION

- ! Municipal Property Act (MPA)
- ! Regulations for the Implementation of the MPA
- ! Other
 - Constitution of the Republic of Bulgaria
 - Concession Act
 - State Property Act
 - Territorial and Settlement Structure Act
 - Miscellaneous Ordinances and Decrees
- ! Chapter Eight, Article 67
 - Right to use
 - Permit the performance of
- ! Chapter Eight, Article 68
 - Term of Agreement

- ! Chapter Eight, Article 69
Lists “right to use” projects

- ! Chapter Eight, Article 70
Lists “permit to perform” activities

- ! Chapter Eight, Article 71
Procedure for granting Concession

- ! Chapter Eight, Article 72
Requirements of “Decision” to grant a concession

- ! Chapter Eight, Articles 73-74-75
States certain rights in the contract

LEGAL FOUNDATION

REGULATIONS FOR IMPLEMENTATION OF THE MPA

- ! Chapter Three, Article 24
 - Decision of Municipal Council grants concession after tender
 - Mayor signs concession agreement

- ! Chapter Three, Article 25
 - Lists 9 topics to be covered in agreement

- ! Chapter Three, Article 26
 - Lists 7 conditions that terminate the contract
 - Provides when municipality is “privileged creditor”

LEGAL FOUNDATION

OTHER LAWS

- ! Constitution
- ! Concessions Act
- ! State Property Act
- ! Territorial Settlement and Structure Act
- ! Council of Ministers Decrees on Pricing
- ! Council of Ministers Decrees on design and control of construction of gas supply systems

MODEL CONCESSION AGREEMENT

SUBJECT OF AGREEMENT

- !** Right to use WHAT Municipal Property
- !** Permission to perform WHAT Municipal Activity
- !** Ownership of property and new sites to carry out the concession grant

SUBJECT OF THE AGREEMENT

RIGHT TO USE *WHAT* PROPERTY

- ! Municipal property to be defined clearly—map suggested
- ! Government property in the territory not meant to be subject to the concession should be stated in the agreement
- ! Legal right to use “future sites” could be challenged – this right reinforced in agreement

SUBJECT OF AGREEMENT

PERMISSION TO PERFORM *WHAT* ACTIVITIES

- !** Construct a gasification system
- !** Provide gas supply service – any limitations?

SUBJECT OF AGREEMENT

OWNERSHIP OF PROPERTY AND NEW SITES TO CARRY OUT CONCESSION GRANT

- ! Existing or newly constructed infrastructure is municipal property

- ! Procedure to use or pass through private property – “Eminent Domain” – Act for Territorial and Town Planning

- ! Rights for the construction of underground pipeline systems – Article 66 of Property Act

- ! Conclusion – any fixed infrastructure is owned by the municipality

MODEL CONCESSION AGREEMENT

TERM OF AGREEMENT

- ! Allowable length by law
- ! Councils privilege of extension
- ! Concessionaire's renewal preference
- ! Other considerations

TERM OF AGREEMENT

ALLOWABLE LENGTH BY LAW

- ! Stated as a maximum – 15 years

Considered by many as too short a period to attract investment

COUNCIL'S PRIVILEGE OF EXTENSION

- ! Has authority to extend a maximum of additional ten years
- ! No limitation on when an extension can be made
- ! Could be used as an incentive by Council
- ! Timely notification of desire to extend by both parties is good policy

TERM OF AGREEMENT

CONCESSIONAIRE'S RENEWAL PREFERENCE

- ! Provided by MPA – assuming equality in offering bids
- ! In Model Concession Agreement, this right is provided; extension of contract may be refused by Council

OTHER CONSIDERATIONS

- ! Provision to administer expected amendment to MPA, lengthening maximum term of concession
- ! Actual choice of term length within range allowable by law

MODEL CONCESSION AGREEMENT

PRICE OF NATURAL GAS

- ! Council of Ministers Control
- ! Competitive market prices vs. Monopolistic prices
- ! Pricing Reforms and their effect

PRICE OF NATURAL GAS

COUNCIL OF MINISTERS CONTROL

- ! Present methodology provides base price and max % markup nation wide
- ! Does not reflect local gas distributor cost
- ! Uncertainty increases investment risk – provides no investment incentive

COMPETITIVE MARKET PRICES V. MONOPOLISTIC PRICES

- ! Right to chose supplier, incentive for better service
- ! Incentive for efficient operations = low price
- ! Regulation needed to replace competition in monopolies

PRICE OF NATURAL GAS

PRICING REFORMS & THEIR EFFECT

- ! Where does the price authority rest?
 - Regional committee
 - Municipal council
 - Concessionaire

- ! What is the Municipal role?
 - To intervene
 - To review and approve
 - To determine methodology

- ! Municipal obligations in price reforms
 - To assure it is in the municipality's interest
 - To protect its position on price reform in the concession agreement
 - To pursue with other municipalities a fair price policy for all participants

MODEL CONCESSION AGREEMENT

CONCESSION FEES

- ! Why a Concession Fee?
- ! Methodology used in setting fee
- ! Other considerations

CONCESSION FEES

WHY A CONCESSION FEE?

- ! Consideration for granting a right
- ! Right contains opportunity for financial gain
- ! Municipality has costs associated with the granting and regulating the right

CONCESSION FEES

METHODOLOGY USED

- ! Costs incurred connected with concession
- ! Arbitrary flat fee
- ! Related to concessionaire's profit
- ! Cost to provide another municipal service
- ! Combination of any of above

CONCESSION FEES

OTHER CONSIDERATIONS

- ! Time of payments, grace periods
- ! Mixed fee methodology
- ! Remember, service users are ultimate fee payers
- ! Concession fee methodology should be included in Concession request for bids
- ! Large concession fee will not make up for inefficient concession operator

MODEL CONCESSION AGREEMENT

RIGHTS AND OBLIGATIONS OF PARTIES

- ! Required by Municipal Property Act
- ! Concessionaire's rights
- ! Concessionaire's obligations
- ! Municipality's rights
- ! Municipality's obligations

RIGHTS AND OBLIGATIONS OF PARTIES

REQUIRED BY MUNICIPAL PROPERTY ACT

- ! Article 25 – reg. for implementation of Municipal Property Act
- ! Essence of Agreement
- ! Length of Agreement requires clarity of each party's rights and obligations
- ! Article 54 of Agreement states that the agreement “sets out all rights and obligations of parties with regard to the concession”

RIGHTS AND OBLIGATIONS OF PARTIES

THE CONCESSIONAIRE'S RIGHTS

- ! *Exclusive* right to construct gas distribution system in municipal territory
- ! Right to use *future* sites for gas distribution
- ! *Exclusive* right to supply gas to end-users
- ! Right to use municipal property to sell gas
- ! Right to terminate supply of gas to non paying customers
- ! Right to sub-contract the performance of parts of granted activities

RIGHTS AND OBLIGATIONS OF PARTIES

THE CONCESSIONAIRE'S OBLIGATIONS

- ! Implement construction and investment plan for gas distribution system
- ! Operate system under Bulgarian standards
- ! Supply gas to all who meet requirements
- ! Maintain supply system within standards
- ! Operate system during period concession is in transition – six months maximum
- ! Pay concession fee & insure concession sites and network
- ! Neither transfer nor burden concession rights
- ! Provide information & access

RIGHTS AND OBLIGATIONS OF PARTIES

THE MUNICIPALITY'S RIGHTS

- !** To receive a concession fee
- !** Right of ownership of sites and infrastructure of gas system
- !** Right of access and to information needed to regulate the concession activity
- !** Right to demand action to repair system facilities

RIGHTS AND OBLIGATIONS OF PARTIES

THE MUNICIPALITY'S OBLIGATIONS

- ! Not to interfere with the performance of the concession activities

- ! Provide available information and assist in securing permits and licenses related to concession activities

- ! Not to grant the same exclusive right for the term of the concession agreement

- ! To offer legal assistance to concessionaire against third parties trying to impede the concessions activities

- ! To identify and exclude any customers the concessionaire can not supply

MODEL CONCESSION AGREEMENT

PERFORMANCE: GUARANTEES & PENALTIES

- !** Concessionaire's guarantees
- !** Concessionaire's non performance penalties
- !** Municipality's non performance penalties

PERFORMANCE: GUARANTEES & PENALTIES

CONCESSIONAIRE'S GUARANTEES

- ! Bonds required by Municipal Property Act
- ! Performance of *what* obligations municipal decision
- ! Model Agreement guarantees financial obligations
- ! Guarantees reimburse for losses, should not be considered punitive

PERFORMANCE: GUARANTEES & PENALTIES

CONCESSIONAIRE'S NON PERFORMANCE PENALTIES

- ! Foundation – Bulgarian Contractual Law
- ! Unilateral agreement termination – major obligations
- ! Monetary penalty when:
 - Failure to implement investment program
 - Failure to provide gas supply during concession transition
- ! Lesser penalties for partial non performance negotiated by parties and attached to agreement

PERFORMANCE: GUARANTEES & PENALTIES

MUNICIPALITY'S NON PERFORMANCE PENALTIES

- ! Unilateral termination if concession right is not given legal support by municipality
- ! Lesser penalties for partial non performance negotiated by parties
- ! In all cases non performance related to “Force majeure” is not responsibility of either party

MODEL CONCESSION AGREEMENT

TERMINATION; DISPUTES; FINAL PROVISIONS

- !** Termination
- !** Disputes
- !** Final provisions

TERMINATION; DISPUTES; FINAL PROVISIONS

TERMINATION

- ! Municipal Property Act:
 - Expiration of term
 - Mutual agreement
 - Implementation becomes impossible
 - Termination of the Concessionaire as judicial person
 - Bankruptcy judgment
 - Other court judgement

- ! As provided by in Agreement as non-performance penalties

- ! Termination protocol agreed to by both parties to provide uninterrupted service

TERMINATION; DISPUTES; FINAL PROVISIONS

DISPUTES

- ! If Agreement is incomplete, Bulgarian Substantive Law will apply
- ! If Agreement on disputes can not be reached by parties, Bulgarian legislation will prevail
- ! Bulgarian Chamber of Commerce and Industry's Court of Arbitration is appointed arbitrator in the Model Agreement

TERMINATION; DISPUTES; FINAL PROVISIONS

FINAL PROVISIONS

- ! In unforeseeable circumstances, under Article 307 of Commercial Act, Court can be asked to intervene
- ! Commitment to support social programs
- ! Statement of inclusively of Agreement

The "General" worksheet contains the ability to define basic types of spreadsheets. These types allow you to define term of concession agreement and concession fee methodology by changing the number in the shadowed area.

CONCESSION TERM BASE				
CONCESSION TERM CHOICE		1		
1	15	YEARS		
2	25	YEARS		
3	35	YEARS		

CONCESSION FEE				
FEE BASE APPLIED		3		
FEE BASE				
1 = FLAT FEE / 2 = % of PROFIT / 3 = BOTH				
FLAT FEE	PER YR.	\$100,000		
% of PROFIT	%	1.00%	PROFIT	

YEARS REMAINING IN CONCESSION USE IN CALCULATING INVESTMENT RECOVERY									
PROJECTION	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	YEAR 7	YEAR 8	
CONCESSION TERM									
1 = 15 YEAR TERM	15	14	13	12	11	10	9	8	
2 = 25 YEAR TERM	25	24	23	22	21	20	19	18	
3 = 35 YEAR TERM	35	34	33	32	31	30	29	28	

ANNEX C
MODEL SPREADSHEET FOR COST-OF-SERVICE PRICING

This "Assumption" worksheet contains the basis for projecting the growth in customers and in the total natural gas consumed by customer class. The value of this worksheet is that by changing different assumptions, conclusions can be modified to reflect change and local conditions

ASSUMPTIONS	TEST YEAR DATA	PROJECTION YEARS							
		1	2	3	4	5	6	7	8
CUSTOMER GROWTH PERCENTAGE									
INDUSTRIAL		20%	25%	33%	25%	12%	7%	0%	0%
MUNICIPAL		0%	25%	20%	17%	14%	0%	0%	0%
COMMERCIAL		20%	25%	33%	25%	20%	17%	18%	0%
RESIDENTIAL		100%	230%	200%	135%	60%	30%	20%	18%
NUMBER OF CUSTOMERS ANNUAL									
INDUSTRIAL	10	12	15	20	25	28	30	30	30
MUNICIPAL	20	20	25	30	35	40	40	40	40
COMMERCIAL	10	12	15	20	25	30	35	41	41
RESIDENTIAL	15	30	99	297	698	1117	1452	1742	2056
TOTAL	55	74	154	367	783	1215	1557	1853	2167
AVE ANN. USAGE- % GROWTH		% GROWTH	% GROWTH	% GROWTH	% GROWTH	% GROWTH	% GROWTH	% GROWTH	% GROWTH
INDUSTRIAL		0%	1%	2%	2%	2%	1%	1%	1%
MUNICIPAL		1%	2%	2%	1%	1%	1%	0%	0%
COMMERCIAL		0%	0%	1%	1%	2%	0%	0%	0%
RESIDENTIAL		1%	1%	1%	3%	3%	2%	1%	0%
AVE ANN USAGE 000 CU. METERS									
INDUSTRIAL	2400	2400	2424	2472	2522	2572	2598	2624	2650
MUNICIPAL	75	76	77	79	80	80	81	81	81
COMMERCIAL	150	150	150	152	153	156	156	156	156
RESIDENTIAL	1.6	1.6	1.6	1.6	1.7	1.7	1.8	1.8	1.8
TOTAL USAGE - 000 CU. METERS									
INDUSTRIAL	24,000	28,800	36,360	49,326	62,891	71,846	77,644	78,421	79,205
MUNICIPAL	1,500	1,515	1,932	2,364	2,794	3,217	3,249	3,249	3,249
COMMERCIAL	1,500	1,800	2,250	3,022	3,816	4,671	5,465	6,448	6,448
RESIDENTIAL	24	48	162	490	1,185	1,953	2,590	3,139	3,704
TOTAL	27,024	32,163	40,703	55,202	70,685	81,687	88,948	91,257	92,606
LOW INCOME HOUSEHOLDS (LIH)									
% LIH IN RESIDENTIAL CLASS		0%	0%	0%	3%	3%	4%	4%	4%
NUMBER OF LIH		0	0	0	21	34	58	70	82
LIH SOCIAL RELIEF - 000CU METERS		0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
REMAINING LIH USAGE- 000CU MT.		1.0	1.0	1.0	1.1	1.1	1.2	1.2	1.2
LIH ANN.BILLABLE USAGE - 000CU. MT		0	0	0	22	37	67	81	96
LIH RELIEF USAGE - 000CU. MT		0	0	0	13	21	37	44	52

This worksheet contains the Assumptions that are integral to the development of cost needs used in the projections. The Bulgargas natural gas purchase price for the test period is stated. Rates of inflation are estimated, as are burden as a percent of labor,taxes %, and profit %. Any of the % can be changed. The purchased gas inflation % is used to calculate the Bugargas price in the projection years. The next section of this worksheet contains capital asset information, profit calculation, and a borrowing plan. This section contributes to "other cash needs" in COST NEEDS. Investment Recovery is calculated by dividing Available Assets with the number of years remaining in the Concession. Amount of loan, term, rate and drawdown can be changed.

ASSUMPTIONS	TEST YEAR DATA	PROJECTION YEARS							
		1	2	3	4	5	6	7	8
BULGARGAS PRICE-000CU METERS	\$118.00	\$121.54	\$125.19	\$128.94	\$131.52	\$134.15	\$136.83	\$139.57	\$142.36
RATE OF INFLATION									
PURCHASED GAS		3%	3%	3%	2%	2%	2%	2%	2%
WAGES		4%	4%	4%	3%	3%	3%	3%	3%
ALL OTHER		5%	5%	5%	4%	4%	4%	4%	4%
WAGE BURDEN % OF LABOR		42%	42%	40%	38%	36%	34%	34%	34%
RATE PROJECTIONS									
TAXES		42.00%	42.00%	42.00%	42.00%	42.00%	42.00%	42.00%	42.00%
PROFIT		12.00%	12.00%	12.00%	12.00%	12.00%	12.00%	12.00%	12.00%
CAPITAL PROGRAM									
ASSET BAL. BEGIN OF YEAR		\$1,600,000	\$1,866,667	\$2,197,619	\$2,490,110	\$2,649,267	\$2,590,243	\$2,331,219	\$2,072,194
ASSETS CONST. IN YEAR		\$400,000	\$500,000	\$500,000	\$400,000	\$200,000	\$0	\$0	\$0
AVAILABLE ASSETS		\$2,000,000	\$2,366,667	\$2,697,619	\$2,890,110	\$2,849,267	\$2,590,243	\$2,331,219	\$2,072,194
INVESTMENT RECOVERY		\$133,333	\$169,048	\$207,509	\$240,842	\$259,024	\$259,024	\$259,024	\$259,024
ASSET BAL. END OF YEAR	\$1,600,000	\$1,866,667	\$2,197,619	\$2,490,110	\$2,649,267	\$2,590,243	\$2,331,219	\$2,072,194	\$1,813,170
AVE. UNRECOVERED ASSETS		\$1,733,333	\$2,032,143	\$2,343,864	\$2,569,689	\$2,619,755	\$2,460,731	\$2,201,707	\$1,942,682
ALLOWABLE PROFIT ON AVE. UNRECOVERED ASSETS		\$208,000	\$243,857	\$281,264	\$308,363	\$314,371	\$295,288	\$264,205	\$233,122
LOAN PROGRAM									
AMOUNT OF LOAN	\$2,000,000								
TERM IN YEARS	5								
INTEREST RATE	10.00%								
DRAW DOWN		\$500,000	\$600,000	\$400,000	\$500,000	\$0	\$0	\$0	\$0
BALANCE BEGIN YEAR		\$0	\$400,000	\$750,000	\$766,667	\$633,333	\$0	\$0	\$0
PRINCIPLE DUE		\$100,000	\$250,000	\$383,333	\$633,333	\$633,333	\$0	\$0	\$0
BALANCE END OF YEAR		\$400,000	\$750,000	\$766,667	\$633,333	\$0	\$0	\$0	\$0
AVER. BALANCE OUTSTANDING		\$200,000	\$575,000	\$758,333	\$700,000	\$316,667	\$0	\$0	\$0
INTEREST DUE		\$20,000	\$57,500	\$75,833	\$70,000	\$31,667	\$0	\$0	\$0

PRINCIPLE PAYBACK YEARS	NO. YEARS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	YEAR 7	YEAR 8
TERM OF LOAN	10	10	9	8	7	6	5	4	3
	8	8	7	6	5	4	3	2	1
	5	5	4	3	2	1	0	0	0

LOW-INCOME HOUSEHOLDS (LIH) RELIEF FOR CENTRAL HEAT PER BULGRIAN REGULATION FOR SOCIAL SUPPORT		
GIGA CALORIC VALUE - PER HEATING MONTH		0.7 GCAL
CALORIC VALUE PER CU. METER - NATURAL GAS		8000
ESTIMATED BOILER EFFICIENCY		83.0%
ADJUSTED CALORIC VALUE CU. MT.		6640
GIGA CALORIC VALUE - IN ONE CUBIC METER		0.0066 GCAL
GIGA CALORIC VALUE - 10,000 CU. METERS		66 GCAL
1 GIGA CALORIC VALUE = CU. METERS		151 CU. Mt.
EFFECTIVE MONTHLY CU. METER HEATING RELIEF		105 CU. Mt.
EFFECTIVE HEATING SEASON RELIEF - SIX MONTHS		633 CU. Mt.

	PROJECTION YEARS							
	1	2	3	4	5	6	7	8
ANNUAL REVENUE VALUE OF LIH RELIEF								
USING "AVERAGE ACCOUNTING RATE"	\$0	\$0	\$0	\$3,422	\$5,727	\$10,269	\$12,660	\$15,137
USING ALLOC. COSTS G&A AND OTHER	\$0	\$0	\$0	\$6,468	\$8,978	\$14,800	\$17,381	\$20,035
REDUCTION IN USAGE USED IN RATE ANALYSIS FROM LIH SUPPORT								
ADJUSTED TOTAL USAGE	32,163	40,703	55,202	70,672	81,666	88,911	91,213	92,554
ADJUSTED RESIDENTIAL USAGE	48	162	490	1,172	1,932	2,553	3,095	3,652
CHANGE IN BILLING RATES-RESIDENTIAL FROM ABOVE CHANGE IN USAGE TOTALS								
"AVERAGE ACCOUNTING RATE"	0.157	0.157	0.155	0.153	0.153	0.154	0.155	0.158
ALLOCATED COST - G&A AND OTHER COSTS	1.550	0.847	0.450	0.293	0.243	0.225	0.216	0.211

The cost/cash needs worksheet takes the test year, usually the last full 12 month period, and develops the projected needs automatically for whatever number of years in the projection. In calculating operating and G & A expenses, test year costs are adjusted using the inflation projections contained in ASSUMPTIONS 2. You can affect the outcome of these calculation by changing the inflation estimates or the test year amounts. Interest is carried forward from ASSUMPTION 2. Investment recovery is carried forward to this worksheet from ASSUMPTION 2. It represents the total unrecovered investment in the gas system divided by the number of years remaining in the Concession agreement Taxes, as stated in ASSUMPTION 2, are estimated to be 42% of revenue less all other cost/cash needs. The concession fee is set in the GENERAL worksheet , either at \$100,000 annually , 1 % of previous years profits, or the both combined. Profit % is allowed in ASSUMPTION 2 at 12 % of average unrecovered investment for each projection year. The tax and Profit rates may be changed or adjusted in ASSUMPTION 2, the concession fee in GENERAL.

	TEST YEAR DATA	PROJECTION YEARS							
		1	2	3	4	5	6	7	8
OPERATING EXPENSE									
GAS PURCHASES	\$3,188,832	\$3,909,149	\$5,095,480	\$7,117,884	\$9,296,589	\$10,958,355	\$12,171,052	\$12,736,752	\$13,183,558
SYSTEM MAINTENANCE SUPPLIES	\$92,000	\$96,600	\$101,430	\$106,502	\$110,762	\$115,192	\$119,800	\$124,592	\$129,575
MAINTENANCE LABOR	\$105,000	\$109,200	\$113,568	\$118,111	\$121,654	\$125,304	\$129,063	\$132,935	\$136,923
LABOR BURDEN	\$44,100	\$45,864	\$47,699	\$47,244	\$46,229	\$45,109	\$43,881	\$45,198	\$46,554
OTHER	\$21,000	\$22,050	\$23,153	\$24,310	\$25,283	\$26,294	\$27,346	\$28,439	\$29,577
TOTAL OPERATING EXPENSE	3,450,932	4,182,863	5,381,329	7,414,051	9,600,516	11,270,254	12,491,141	13,067,915	13,526,187
G & A EXPENSE									
CUSTOMER SERVICE	\$16,000	\$16,640	\$17,306	\$17,998	\$18,538	\$19,094	\$19,667	\$20,257	\$20,864
ACCOUNTING	\$13,250	\$13,780	\$14,331	\$14,904	\$15,352	\$15,812	\$16,286	\$16,775	\$17,278
MARKETING	\$9,800	\$10,192	\$10,600	\$11,024	\$11,354	\$11,695	\$12,046	\$12,407	\$12,779
OFFICE RENT	\$25,000	\$26,250	\$27,563	\$28,941	\$30,098	\$31,302	\$32,554	\$33,856	\$35,211
UTILITIES	\$20,300	\$21,315	\$22,381	\$23,500	\$24,440	\$25,417	\$26,434	\$27,491	\$28,591
STAFF WAGES	\$32,000	\$33,280	\$34,611	\$35,996	\$37,076	\$38,188	\$39,333	\$40,513	\$41,729
TRAINING	\$14,000	\$14,700	\$15,435	\$16,207	\$16,855	\$17,529	\$18,230	\$18,960	\$19,718
LABOR BURDEN	\$29,841	\$31,035	\$32,276	\$31,969	\$31,281	\$30,524	\$29,693	\$30,584	\$31,501
OTHER									
TOTAL G & A EXPENSE	\$160,191	\$167,192	\$174,502	\$180,537	\$184,994	\$189,562	\$194,244	\$200,844	\$207,672
TOTAL OPERATING, G & A EXP.	\$3,771,314	\$4,350,055	\$5,555,831	\$7,594,588	\$9,785,509	\$11,459,816	\$12,685,385	\$13,268,759	\$13,733,859
OTHER CASH NEEDS									
INTEREST		\$20,000	\$57,500	\$75,833	\$70,000	\$31,667	\$0	\$0	\$0
INVESTMENT RECOVERY		\$133,333	\$169,048	\$207,509	\$240,842	\$259,024	\$259,024	\$259,024	\$259,024
CONCESSION FEE		\$102,080	\$102,439	\$102,813	\$103,084	\$103,144	\$102,953	\$102,642	\$102,331
TAXES		\$225,333	\$264,179	\$304,702	\$334,060	\$340,568	\$319,895	\$286,222	\$252,549
PROFIT		\$208,000	\$243,857	\$281,264	\$308,363	\$314,371	\$295,288	\$264,205	\$233,122
TOTAL OTHER CASH NEEDS		\$688,747	\$837,022	\$972,121	\$1,056,348	\$1,048,773	\$977,160	\$912,093	\$847,026
TOTAL COST/CASH NEEDS		\$5,038,802	\$6,392,853	\$8,566,710	\$10,841,858	\$12,508,589	\$13,662,545	\$14,180,852	\$14,580,885

This worksheet uses the information provided in ASSUMPTIONS 1&2, and COST NEEDS, and begins to develop gas tariff rates. The first example is simply total cost of service, or cost/cash needs, divided by total gas consumption. This is called an "AVERAGE ACCOUNTING RATE", and provides one rate per cubic meter used for all customers.

The next example is a "COST OF SERVICE RATE" where costs are separated by function and allocated to classes of customers using a functional cost allocation basis. G & A costs from COST NEEDS are posted to this worksheet. Total customers from ASSUMPTION 1 are posted. These numbers are divided to reach a "G & A cost" allocation base. The same procedure is follow for all other cost (total cost/cash needs - G & A costs), which are divided by total gas usage. This results in an "all other cost" allocation base.

(continues on RATE DEVELOP. 2)

	TEST YEAR DATA	PROJECTION YEARS							
		1	2	3	4	5	6	7	8
RATE DEVELOPMENT "AVERAGE ACCOUNTING RATE"									
TOTAL COST/CASH NEEDS DIVIDED BY TOTAL GAS USAGE IN OOO CU MTS EQUALS		\$5,038,802	\$6,392,853	\$8,566,710	\$10,841,858	\$12,508,589	\$13,662,545	\$14,180,852	\$14,580,885
RATE PER CUBIC METER		\$0.157	\$0.157	\$0.155	\$0.153	\$0.153	\$0.154	\$0.155	\$0.157
"COST OF SERVICE RATE" ALLOCATING G&A COSTS-ALL OTHER									
GENERAL & ADM. COSTS DIVIDED BY TOTAL NUMBER OF CUSTOMERS EQUALS		\$167,192	\$174,502	\$180,537	\$184,994	\$189,562	\$194,244	\$200,844	\$207,672
G&A COSTS-ALLOCATION BASE		\$2,259	\$1,133	\$492	\$236	\$156	\$125	\$108	\$96
ALL OTHER COSTS DIVIDED BY TOTAL GAS USAGE IN OOO CU MTS EQUALS		\$4,871,610	\$6,218,351	\$8,386,172	\$10,656,864	\$12,319,028	\$13,468,301	\$13,980,008	\$14,373,213
ALL OTHER COSTS ALLOCATION BASE		\$151	\$153	\$152	\$151	\$151	\$151	\$153	\$155

CONTINUES ON RATE DEVELOP.2

The cost allocation basis from RATE DEVELOP. 1 are now applied to the respective customer class groupings. The "G & A base" is multiplied by the number of customers in each customer class. The "all other cost" allocation base is multiplied by total usage of each customer class. The customer class cost totals are added and a tariff rate developed by dividing each class combined cost allocation total by that class total gas usage.

	TEST YEAR DATA	PROJECTION YEARS								
		1	2	3	4	5	6	7	8	
ALLOCATION OF GSA COSTS TO CUSTOMER CLASSES										
G & A COST ALLOCATION BASE MULTIPLIED BY NO. OF CUSTOMERS										
INDUSTRIAL		\$27,112	\$16,997	\$9,817	\$5,892	\$4,359	\$3,729	\$3,239	\$2,864	
MUNICIPAL		\$45,187	\$28,328	\$14,762	\$8,294	\$6,245	\$4,993	\$4,336	\$3,835	
COMMERCIAL		\$27,112	\$16,997	\$9,817	\$5,892	\$4,670	\$4,369	\$4,477	\$3,960	
RESIDENTIAL		\$67,780	\$112,180	\$146,142	\$164,915	\$174,287	\$181,153	\$188,791	\$197,013	
TOTAL G & A COSTS		\$167,192	\$174,502	\$180,537	\$184,994	\$189,562	\$194,244	\$200,844	\$207,672	
ALLOCATION OF ALL OTHER COSTS TO CUSTOMER CLASSES										
ALL OTHER COSTS ALLOCATION BASE MULTIPLIED BY CLASS GAS USAGE										
INDUSTRIAL		\$4,362,164	\$5,554,826	\$7,493,457	\$9,481,685	\$10,835,006	\$11,756,773	\$12,013,615	\$12,293,279	
MUNICIPAL		\$229,468	\$295,100	\$359,179	\$421,222	\$485,135	\$491,969	\$497,740	\$504,284	
COMMERCIAL		\$272,635	\$343,739	\$459,158	\$575,290	\$704,358	\$827,434	\$987,823	\$1,000,811	
RESIDENTIAL		\$7,343	\$24,686	\$74,378	\$178,667	\$294,529	\$392,126	\$480,831	\$574,840	
TOTAL ALL OTHER COSTS		\$4,871,610	\$6,218,351	\$8,386,172	\$10,656,864	\$12,319,028	\$13,468,301	\$13,980,008	\$14,373,213	
ALLOCATED COST TOTALS BY CUSTOMER CLASS										
INDUSTRIAL		\$4,389,276	\$5,571,823	\$7,503,274	\$9,487,577	\$10,839,365	\$11,760,502	\$12,016,854	\$12,296,143	
MUNICIPAL		\$274,655	\$323,428	\$373,941	\$429,516	\$491,380	\$496,962	\$502,076	\$508,119	
COMMERCIAL		\$299,747	\$360,736	\$468,975	\$581,182	\$709,028	\$831,802	\$992,301	\$1,004,770	
RESIDENTIAL		\$75,123	\$136,865	\$220,521	\$343,583	\$468,816	\$573,279	\$669,622	\$771,853	
TOTAL COST/CASH NEEDS		\$5,038,802	\$6,392,853	\$8,566,710	\$10,841,858	\$12,508,589	\$13,662,545	\$14,180,852	\$14,580,885	
COST OF SERVICE RATE-PER CU. MT ALLOTTED COST- G&A AND OTHER DIVIDE ALLOCATED COST TOTALS BY CUSTOMER CLASS GAS USAGE										
				PER CUBIC METER						
INDUSTRIAL		\$0.152	\$0.153	\$0.152	\$0.151	\$0.151	\$0.151	\$0.153	\$0.155	
MUNICIPAL		\$0.181	\$0.167	\$0.158	\$0.154	\$0.153	\$0.153	\$0.155	\$0.156	
COMMERCIAL		\$0.167	\$0.160	\$0.155	\$0.152	\$0.152	\$0.152	\$0.154	\$0.156	
RESIDENTIAL		\$1.550	\$0.847	\$0.450	\$0.290	\$0.240	\$0.221	\$0.213	\$0.208	

The first section of this worksheet displays the average bill for each customer class calculated from the two gas rates developed in the preceding worksheets. The second section of the worksheets shows the effect of a LIH program granting .7gcal of heat free to the needy under the two rate methods discussed. The last two lines in the worksheet display the effect on other residential users annual bill if they absorb the cost of the LIH program.

CUSTOMER ANNUAL GAS BILL	TEST YEAR DATA	PROJECTION YEARS							
		1	2	3	4	5	6	7	8
USING "AVER. ACCOUNTING RATE"									
INDUSTRIAL		\$375,989	\$380,714	\$383,698	\$386,818	\$393,904	\$399,073	\$407,769	\$417,295
MUNICIPAL		\$11,867	\$12,135	\$12,230	\$12,209	\$12,311	\$12,472	\$12,618	\$12,785
COMMERCIAL		\$23,499	\$23,559	\$23,511	\$23,470	\$23,900	\$23,974	\$24,253	\$24,574
RESIDENTIAL		\$253	\$256	\$256	\$260	\$268	\$274	\$280	\$284
USING "COST OF SERVICE RATE" ALLOCATED COST-G&A AND OTHER									
INDUSTRIAL		\$365,773	\$371,455	\$376,104	\$380,454	\$388,090	\$393,524	\$402,102	\$411,447
MUNICIPAL		\$13,733	\$12,937	\$12,465	\$12,237	\$12,280	\$12,420	\$12,548	\$12,699
COMMERCIAL		\$24,979	\$24,049	\$23,507	\$23,306	\$23,694	\$23,757	\$24,018	\$24,320
RESIDENTIAL		\$2,504	\$1,382	\$742	\$492	\$420	\$395	\$384	\$375
LOW INCOME HOUSEHOLDS PROGRAMS									
ANNUAL BILL ASSUMING SOCIAL SUPPORT OF .7 GCAL OF HEATING-MO									
USING "AVER. ACCOUNTING RATE"		\$154	\$157	\$158	\$163	\$171	\$177	\$182	\$184
USING ALLOC. COST-G&A AND OTHER		\$1,524	\$847	\$458	\$309	\$268	\$255	\$249	\$244
ANN. BILL FOR OTHER RESIDENTIAL CUSTOMERS IF THEY ABSORB COST									
USING "AVER. ACCOUNTING RATE"		\$253	\$256	\$256	\$260	\$268	\$274	\$280	\$284
USING ALLOC. COST-G&A AND OTHER		\$2,504	\$1,382	\$742	\$498	\$424	\$401	\$390	\$381

**ANNEX D
WORKSHOP
EXCEL SPREADSHEET DEMONSTRATING COST OF SERVICE PRICING**

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- **DISCUSSION OF SESSION TOPICS**
- **PRESENTATION TECHNIQUES AND MATERIALS**

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SAMPLE AGENDA

PROPOSED OVERHEADS FOR SESSION TOPICS

WORKSHOP

EXCEL SPREADSHEET DEMONSTRATING COST OF SERVICE PRICING

I. OBJECTIVES OF WORKSHOP

In July of 1998 this project presented in Stara Zagora, a workshop on the “Fundamentals of Natural Gas Pricing”. The objective of that workshop was to provide a fundamental understanding of the methodology of retail gas price determination, to illustrate cost drives price, and to review the relationship between an unsubsidized price and social welfare concerns.

Amendment B to RFS No. 215 authorized the development of a “Spreadsheet Model Describing Cost of Service Pricing”. That activity is meant to expand upon the original workshop and provide an interactive tool to aid in the dissemination of its economic principles. The Model was to include financial operations, system expansion, and end-user impact of a local gas distributor pricing.

With the completion of that deliverable, this material is prepared. Its purpose is to form the basis of a workshop to instruct and train municipal staff, ministry personnel and others within the influence of the local government initiative span, in the use and application of the model spreadsheet and its principles.

The workshop uses as an ancillary source of information the model spreadsheet deliverable and its worksheet examples. That document should be required reading as a primer for this workshop.

The workshop shows how various economic inputs affect costs and ultimately price. It demonstrates “cost of service” pricing methodology at its simplest form. This simple form has been chosen because any movement away from pricing on a national basis in Bulgaria will take time, and the underlying principals of “cost of service” pricing are just beginning to take root in the governmental agencies managing utility service pricing.

The steps and assumptions necessary to develop the spreadsheet are highlighted. This is to focus on a municipality’s need to understand the principles that go into defining the revenue that gas prices must generate that cover cost/cash needs.

The objective of the workshop is to build on the previous tools presented on this subject, to confirm that their lessons have been understood, and to demonstrate the adaptability and flexibility that the spreadsheet tool avails in the application of cost of service pricing principles.

II. DISCUSSION SESSION TOPICS

Discussion and Question and Answer sessions of approximately a quarter of a hour will follow each presentation topic. This means of attendee participation is chosen to:

- ! To reinforce and resolve questions on critical concepts of technical and economic nature while still fresh in the audience*s mind.
- ! To build toward an understanding of the objectives of allocation of cost of service and its price effect.
- ! To encourage and stimulate participation early on in the workshop.

In the presentation segments, the topics have been chosen to lead the workshop participants through the developmental logic and information requirements of cost of service pricing. Each segment is meant to provide a foundation stone upon which those in attendance build their understanding of its basis principles. These presentation segments are:

- ! Purpose of the Spreadsheet
- ! Steps in developing the Spreadsheet
- ! Assumptions used in the Spreadsheet
- ! Data Development
- ! Rate Development
- ! End-user Impact

From these presentations the following questions and concepts should be developed and understood.

- ! What do you mean by Cost of Service pricing?
- ! Why are you so concerned about the gas operators cost/cash needs?
- ! Why do big volume users benefit from cost allocation?
- ! What ways do you distinguish customers by class?
- ! What is a functional service?
- ! Who develops policy goal that effect pricing decisions?
- ! Where can I get some assurance in developing assumptions?
- ! Supposing my assumptions is wrong?
- ! If the data I develop is unrealistic what should I do?
- ! If the average accounting rate is so simple why look for refinement?
- ! Explain why the small user, in the heating season, gets more cost allocation?

- ! What do you mean by an immature gas system?
- ! Who pays for LIH programs in western countries?

III. PRESENTATION TECHNIQUES AND MATERIALS

This document containing workshop materials is suitable for presentation to a broad selection of audiences. For any particular audience and setting the presenter will have to introduce techniques that match the present setting and audience. The following suggestions have been successful with a wide range of audiences.

A high official of the sponsoring organization should open the workshop and introduce the team of presenters. Following this a member of the presenting team should give an overview of the workshop purpose and format. He/she should review the workshop binder and explain its content. Next he/she requests each member of the audience to introduce themselves, their affiliation, and expected personnel results from the workshop. This “icebreaker” often results in a more free and open discussion during the remainder of the workshop.

The workshop binder should consist of the agenda, table of contents of the binder, copies of each overhead used in the presentation and an appendix containing excerpts from manuals, previous papers, and reports that illustrate the tools and nomenclature used during the workshop.

During the Discussion Sessions audience participation facilitation techniques should be followed including opening questions to members of the audience, asking individual opinions on the topic presented, and having other members of the presentation team pose questions. At the end of each Discussion Session the audience should be encouraged to pursue further discussion with the presenters at breaks or at the end of the workshop.

The use of Bulgarian language overheads as a means to display and transfer topical content, as well as to outline the relationship to cost based pricing will kept both the presenter and participant in focus. With English presenters this can be particularly helpful.

Consecutive translation of English-speaking presenters, at its best, has its drawbacks. As LGI's underlying objectives of strengthening capabilities at the local level take hold, English presentations should become less common, until then, an effort should be made to increase Bulgarian language presentation, with English speaking experts available for questions and topical expansion.

APPENDIX

SAMPLE AGENDA

COST OF SERVICE SPREADSHEET WORKSHOP

9:00 AM	Welcome and Introductions
9:15 AM	Workshop format
9:30 AM	Spreadsheet Purpose
10:00 AM	Steps in Developing Spreadsheet
10:30 AM	Discussion, Questions & Answers
10:45 AM	Coffee Break
11:00 AM	Assumptions in the Spreadsheet
11:45 AM	Discussion, Questions & Answers
12:00 PM	Lunch
1:15 PM	Data Development
2:00 PM	Discussion, Questions & Answers
2:15 PM	Rate Development
3:00 PM	Discussion, Questions & Answers
3:15 PM	Break
3:30 PM	End-user Impact
4:00 PM	Discussion, Questions & Answers

4:15 PM Summary & Closing Remarks

**COST OF SERVICE WORKSHEET
PRESENTATION**

PURPOSE

COST OF SERVICE SPREADSHEET PURPOSE

- I. Demonstrates method of regulating price in a monopoly – cost of service**

- I. Establishes “cost needs” necessary for a successful gas enterprise**

- I. Provide an interactive tool to model different scenarios in economy**

- I. Illustrates influence of different cost allocation bases on different classes of customers**

- I. Introduces low-income household programs of price relief**

PURPOSE
METHODS OF REGULATING PRICE
IN A MONOPOLY

- II. Regulation necessary to replace lack of competition in monopoly**
 - I. Regulation goal is fairness – to customer, to service provider**
 - I. Cost of Service defines allowable costs**
 - I. Cost of Service is built on matching and allocating costs to service requirements**
 - I. Cost of Service, groups similar users of service in customer classes**
 - I. Cost of Service builds rates by charging customer classes the cost of each service used by a measure of that service cost**

II. Cost of service to adequately allocate requires considerable data

PURPOSE

“COST NEEDS” FOR A SUCCESSFUL GAS ENTERPRISE

III. Provide for Maintenance and Repair

I. Provide for Quality of Service

I. Sufficient to provide incentive to invest and ability to recover investment

I. Provide a fair return on investment – profit

PURPOSE

INTERACTIVE TOOL TO MODEL DIFFERENT ECONOMIC SCENARIOS

I. Spreadsheet designed using EXCEL 5.0

I. Any general condition or assumption may be changed by user

I. Test year data can be changed to reflect individual situation

I. Analysis worksheets calculate and display results of any change

I. User familiar with the logic of EXCEL 5.0 can expand basic worksheets presented

PURPOSE

INFLUENCE OF DIFFERENT COST ALLOCATION BASES ON CUSTOMER CLASSES

- I. Major cost for the local gas distributor is purchased gas**

- I. Assignment of other costs of service to allocation bases other than volume used spread more cost to small seasonal users**

- I. Reflects economy of scale and marginal cost principle**

- I. Significant cost allocations are desired when the gas enterprise is mature**

PURPOSE

**INTRODUCES LOW-INCOME PROGRAMS
FOR PRICE RELIEF**

- II. For gas to service residential homes some form of low-income household relief is required**
- I. Gas today is not a common home heating fuel**
- I. Present Welfare Act provides central heating relief**
- I. That amount of heating relief is calculated for natural gas and displayed in the Spreadsheet**

**COST OF SERVICE SPREADSHEET
PRESENTATION**

STEPS IN DEVELOPING THE WORKSHOP

COST OF SERVICE SPREADSHEET STEPS IN DEVELOPING THE WORKSHEET

I. Identify present and future customer base

**I. Identify capital construction plan to
service future base**

**I. Identify by functional service categories,
the present cost to provide service**

**I. Identify any policy goals whose application
could effect price policy**

STEPS IN DEVELOPING A SPREADSHEET

IDENTIFY PRESENT AND FUTURE CUSTOMER BASE

- I. Present customers should be identified and grouped by categories of required service**

- I. Volume usage statistics by customer class need to be compiled**

- I. Realistic grow estimates for customers and usage should be developed**

- I. Obstacles to estimated growth should be identified, considered and where possible addressed**

- I. Is system expansion needed?**

STEPS IN DEVELOPING A SPREADSHEET

CAPITAL CONSTRUCTION PLAN TO MEET PROJECTED SERVICE GROWTH

- I. Necessary future investment**

- I. Service providers ability to finance capital needs – interest, term of loan**

- I. Time schedule to accomplish capital construction**

- I. Relationship of added capacity segments to customer growth**

STEPS IN DEVELOPING A SPREADSHEET

IDENTIFY BY FUNCTIONAL CATEGORIES THE PRESENT COST OF SERVICE

I. Cost Analysis by function

- Distribution**
- Capacity**
- Storage**
- Customer service**
- General & Administrative**

I. Measures of service used

- Volume – Distribution**
- Average/Peak usage – Capacity**
- Average/Peak usage – Storage**
- No. of bills/customers – Customer Service**
- %volume/% no. of Customers – G & A**

STEPS IN DEVELOPING A SPREADSHEET

POLICY GOALS THAT COULD EFFECT PRICE POLICY

I. Low-income household relief

I. Industrial growth incentives

I. Residential gas use incentives

I. Special purpose industrial “zones”

I. Any form of “cross subsidization”

**COST OF SERVICE SPREADSHEET
PRESENTATION**

ASSUMPTIONS USED IN THE SPREADSHEET

COST OF SERVICE SPREADSHEET ASSUMPTIONS USED IN THE SPREADSHEET

I. General – effects its form

I. Demographic & Volumetric

I. Financial & Economic

I. Social

ASSUMPTIONS USED IN THE SPREADSHEET

GENERAL

I. Term of concession

I. Method of concession fee

I. Inputs to concession fee calculation

ASSUMPTIONS USED IN THE SPREADSHEET

DEMOGRAPHIC AND VOLUMETRIC

I. Growth % for customers and gas usage

I. Test year data

I. Projected Customer and aver. annual usage

I. Estimated total annual gas usage

I. Similar data estimated for low-income households

I. Estimated LIH relief

ASSUMPTIONS USED IN THE SPREADSHEET

FINANCIAL AND ECONOMIC

I. Rates of inflation taxes and profits

I. Capital investment program

I. Calculation of profit on investment

**I. Loan program to support capital
investment program**

ASSUMPTIONS USED IN THE SPREADSHEETS

SOCIAL

II. Based on present Welfare Act.

I. Converts .7 gcal of heat to cubic meters of gas

I. Calculation of programs effect, in total and on the other gas customers

**COST OF SERVICE SPREADSHEET
PRESENTATION**

DATA DEVELOPMENT

COST OF SERVICE SPREADSHEET DATA DEVELOPMENT

II. Operating expense

I. General and administrative expenses

I. Other cash needs

Interest

Investment recovery

Concession fee

Taxes

Profit

I. Relation of total cost/cash needs to revenue

DATA DEVELOPMENT

OPERATING EXPENSES

II. Functional expense categories

I. Test year data

I. Project future years costs, using rate assumptions previously determined

I. Potential for further cost categorizing

DATA DEVELOPMENT

GENERAL AND ADMINISTRATIVE EXPENSES

II. Functional expense categories

I. Test year data

I. Project future years costs, using rate assumptions previously determined

I. Potential for further cost categorizing

DATA DEVELOPMENT

OTHER CASH NEEDS

- I. All dependent on decisions made in assumptions**

- I. Interest, investment recovery, and profit calculated in financial and economic assumptions**

- I. Concession fee calculated from general assumptions and financial and economic assumptions**

- I. Taxes calculated from financial and economic assumptions and the out come of data developed**

**COST OF SERVICE SPREADSHEET
PRESENTATION**

RATE DEVELOPMENT

COST OF SERVICE SPREADSHEET RATE DEVELOPMENT

II. Average Accounting Rate

I. Allocated Cost of Service Rate

I. Other Cost of Service Rate Possibilities

RATE DEVELOPMENT AVERAGE ACCOUNTING RATE

- I. One rate for all users**
- I. No allocated costs for types of services**
- I. Does provide total cost/cash needs to gas provider**
- I. Simple, straight forward, rate calculation, requires minimal information, easily understood**
- I. Recommended for first years of developing local gas distribution network**

RATE DEVELOPMENT ALLOCATED COST OF SERVICE RATE

II. Functional cost classifications

Distribution

Storage

Customer service

Administrative

General

I. Functional costs = cost of service

I. Measures of service = allocation base

I. Customer Classes = similar level of service requirements

I. Service costs by customer class totaled and rate calculated by each class total gas usage

RATE DEVELOPMENT OTHER COST OF SERVICE RATE POSSIBILITIES

I. Further define General & Administrative

Meter related services

Customer related services

Other administrative costs

I. Define costs related to network capacity

Excess capacity (storage)

Average capacity

I. Define costs related to “peak usage” period

I. All require considerable statistics

I. All move cost to smaller volume, heat users

I. Recommended only for mature gas systems

COST OF SERVICE SPREADSHEET

PRESENTATION

END-USER IMPACT

COST OF SERVICE SPREADSHEET END-USER IMPACT

I. Annual average gas bill – customer class

Average accounting rate

Allocated cost of service rate

**Mature system versus immature
system**

I. Benefit of a LIH program

**Considerations in funding LIH
programs**

**END-USER IMPACT
ANNUAL AVERAGE GAS BILL – CUSTOMER
CLASS**

- I. Highlights cost allocation effect**

- I. Stability of Average accounting rate**

- I. Immature system, few residential customers, inordinate burden**

END-USER IMPACT BENEFITS OF A LIH PROGRAM

- II. Over 35% reduction in LIH bill**
 - I. If government funded program – no effect on other customers**
 - I. If other customer funded – effect immeasurable using average accounting rate**
 - I. If other customer funded – minimal effect using allocated cost rate**
 - I. Other customer funded effect will vary with LIH program provisions and number of participants**

ANNEX E

PRICING CONSIDERATIONS FOR LOW INCOME HOUSEHOLDS IN THE SALE OF NATURAL GAS

Situation in Bulgaria

Sale and Distribution of Natural Gas

The bulk of natural gas is currently purchased from Russia by Burgargas, a state company that owns the gas transmission network. Local distributors purchase gas from the high pressure transmission network and sell it to the end users. Some larger industrial customers are reported to purchase directly from the high pressure transmission lines.

While Overgas desires to increase the use of natural gas due to the environmental and technological advantages of natural gas, its use remains relatively low throughout the country. The most recent information from Overgas indicates distribution networks in eight communities, with the size of the local distribution networks ranging from nearly 40,000 linear meters to less than 5,000 meters. The largest system is in Stara Zagora and can service less than 3000 customers, including about 2500 households. The smallest system is in Montana and could serve less than 200 customers.

Prices for gas are set by the National Commission on Prices with the Council of Ministers. Some pricing authority seems to have been transferred to the National Commission on Trade with the Ministry of Commerce and Tourism. Subsequently the State Public Commission on Prices of Power Carriers was established, and they also have a role in the setting of prices for natural gas. Ultimate authority still remains with the Council of Ministers however.

Parameters for the establishment of prices for natural gas are dictated by the Prices Act of 1995 (as amended). It presents mechanisms for determining maximum and minimum price levels as well as other price related standards. In short, the resale (transmission) price for imported natural gas can include a markup of up to 11 percent. Prices for domestically produced gas are based on the cost of imported gas, with consideration of the energy content of the gas. Distributors that buy from the high pressure transmission pipeline and sell through local low pressure distribution lines can add 4% to the price they pay to purchase the gas.

While there is a movement to increase the use of natural gas to a broader sector, the use by individual households remains quite low at present. While this may seem to obviate the need to consider affordability for low income households, this also is an excellent opportunity to define the standards for such service before its use becomes widespread. Establishing such standards soon will provide local distributors with better information on how to expand service and what they might expect in the future provision of service to lower income households.

Social Welfare Act

The Social Welfare Act was published in the Official Gazette in May 1998. The purpose of the Act was to “support citizens who without help from someone else can not meet their basic living needs”. As defined in the Social Welfare Act, “basic living needs shall mean sufficient food, clothing and home in accordance with the social and economic development of the country”. The Act allows for social support to be provided in cash or in some form of in-kind services. Such aid is available to Bulgarian citizens and refugees legally residing in the country.

A specialized body of the Council of Ministers called the Ministry of Labor and Social Policy was set up to coordinate certain activities under the Act. This Ministry is to cooperate with municipalities and NGOs through the Social Welfare Council. A National Office for Social Support was established as a specialized body of the Ministry of Labor and Social Policy with an independent budget. Regional Offices for Social Support were also established to provide “guidance and control” over the Municipal Offices of Social Support.

The Municipal Office of Social Support is charged with:

- a. Identifying and registering individuals and families in need of support and services
- b. Verifying applications
- c. Analyzing needs for support
- d. Implementing support within the municipality
- e. Consulting and working with those in need.

Funding for support generally comes from the following:

- a. Municipal budgets
- b. National budget
- c. Revenues provided against support payments
- d. Available Social Support Funds

- e. National and international social support programs
- f. Donations

Implementing regulations under the Act were established by the Council of Ministers in 1997 and have subsequently been added to and amended. These regulations allow for social support through monthly support, targeted support or one time support. Individuals and families are eligible for monthly support if their income the previous month is lower than a defined minimum as determined by the Council of Ministers. The implementing regulations of the Council of Ministers sets the basic minimum income as the monthly income guaranteed by the government for satisfying basic living needs of an individual living alone. Municipal councils can, however, increase the level of the basic minimum income. Coefficients for different living arrangements and families are also defined in the regulations so minimum income levels can be determined for various types of families or individuals, taking into account factors such as number of children, age and disability.

Support under the Regulations can be provided for no more than three years. Support for heating with electricity is specifically addressed with an energy need of 400 kWh per month. While levels of use are also provided for central heating and hard fuels, no minimum use level for natural gas is provided. These levels of use could be converted to equivalent cubic meters of various qualities of natural gas. The heating season is defined as November 1 through April 30.

Lifeline Considerations in West

In developing strategies and programs for the provision of assistance to low income households for natural gas service in Bulgaria, it may be instructive to view how similar utility based, social welfare programs are administered in the United States. The vast majority of natural gas distributors in the United States are privately owned. Investors loan money to the utilities to build facilities that serve local residences, businesses and municipal buildings. The investors achieve earnings on their investments through the profits of the gas distribution company. Because the local suppliers are generally a monopoly, the prices are regulated by state level utility regulatory commissions. In general, prices are established to recover allowed operating costs, a return of the investments (depreciation) and sufficient earnings or profit to enable the utility to attract new capital from investors.

Recognizing that many utility services are “essential”, life-line rates or subsidies have been established by many regulatory commissions for those customers that could not afford the full price or cost of the service. The “lost” revenues that

result from the subsidies are made up through increases to other customers. As a result, the utility's total revenues are not reduced.

The most significant federal government support comes from the Low Income Home Energy Assistance Program (LIHEAP). This is a federal program that provides heating and cooling assistance to low income households. It is more fully described below.

How Subsidies are Provided by the Utility

Utility based assistance programs are provided by the utility to the individual customer. There are no (or minimal) subsidies provided directly by the government either to the individual or to the utility.

Subsidies are typically provided through a reduction in all or a part of the utility bill. Often, an allowance is provided at a reduced or life-line rate to income eligible customers that will provided for basic needs. Uses in excess of basic needs are often not discounted to avoid any appearance of encouraging wasteful use.

While some programs provide discounts to elderly or disabled customers, this discussion will focus only on programs aimed at low income customers that can not afford the full cost of service. Several types of subsidies are common:

- a. A percentage reduction in the overall bill; waiving of a portion of the bill (such as the fixed service or minimum charge or tax).
- b. Determining bills based on a set percentage of income (Percentage of Income Payment or PIP Plan).

In addition to bill reduction programs, assistance is also provided in other forms such as:

- a. Arrearage forgiveness for all or some of past due bill that have grown too large to pay off. This is typically coupled with the establishment of a payment plan to help ensure future bills will be kept current
- b. Counseling and/or energy audits that provide customers with information on how to better insulate homes and conserve
- c. Rebate programs for the installation of energy conserving devices.

- d. Budget billing where an average monthly bill is rendered to reduce the high winter costs and make up the revenues during the lower cost summer months.

Eligibility and Outreach Issues

A major factor in any program is the determination of eligibility for a discount or subsidy. In many cases, income for the household is verified by various means including review of tax returns. Eligibility is often reviewed on an annual basis. In the case of heating related utilities, eligibility for bill reductions is sometimes only offered during the heating season, with no discounts or subsidies offered at other times of the year.

Eligible income levels are often based on the federally established poverty level. The poverty level income is set annually based on family size. While some programs deem a family eligible if their annual income is below the poverty level, other set eligibility based on a percentage of their federal poverty level (i.e., all families at or below 150% of the poverty level). More sophisticated programs determine various levels of subsidy based on income with larger percentage discounts or subsidies provided to those customers with the lower income levels.

To avoid the administrative costs of verifying the incomes of individual customers, some utilities simply accept eligibility for other social welfare programs. For example, any family eligible under federal welfare programs such as Supplemental Social Security Income (SSI), Food Stamps, or Assistance for Families with Dependent Children (AFDC) would only have to show evidence of eligibility for that program to be eligible for assistance from the utility.

Notification of eligibility varies considerably. In some cases, the utility can have an active outreach program that attempts to identify all potential customers that may be eligible and then notifying them of the existence of the assistance program(s). Some utilities may notify all customers of such programs through notices on the bill or in bill stuffers (notices that are included with the bill to all customers).

Levels of Assistance

The level or amount of assistance varies considerably among utilities. In wealthier service areas, utilities may offer no programs at all. In others, the level of discount can vary considerably. The percentage discounts generally vary from 10% - 40% of the bill (see attached).

Other Issues

As discussed earlier, there are other programs that are often offered to make bill payment easier or more affordable. Programs that forgive all or a portion of past due bills can help families that fell behind and are unable to keep current with their account. Some utilities have found that their cost of collecting these past due accounts can exceed the money they may ultimately receive. In these cases, they will forgive all or a part of the amounts owed in return for a customer's promise to keep current with subsequent bills for a specified period (say one year). If the customer pays the bills on time for the specified period, all past debt is forgiven. However, if the customer does not keep the account current, the past due bills are not forgiven and shut-off proceedings may start.

In colder areas of the country, some states will prohibit an account from being shut-off or terminated during the colder heating season. This allows customers to maintain service during the winter and can help prevent unfortunate, life threatening situations.

Because assistance programs provide service at discounted rates, it is important that wasteful use is not encouraged through reduced prices. Often, the discount will only apply to certain levels of use deemed necessary. These uses can vary based on season and temperature, using indices such as degree days that measure the length and severity of winter. Uses in excess of the established minimum are charged at the higher or normal prices.

LIHEAP

The Low Income Home Energy Assistance Program (LIHEAP) was authorized by the US Congress 1981. It was created in response to the energy crisis in the US in the late 1970*s and early 1980*s to "assist low-income households, particularly those with the lowest income, that pay a high proportion of household income for home energy." The Department of Health and Human Services allocates federal funds to the states as block grants, based on household heating and cooling needs and incomes. The funds are then distributed by the States under individual programs that must be approved by the federal government. The distribution of funds by the states is viewed by some as one of the program's stronger characteristics as it allows for recognition of local needs as well as the efficient use of established organizations within the various states. It is important to note that this program relates only to heating (and cooling) costs, and it is only for residential households. No assistance is made to households for non-heating energy use, and non-residential customers receive no assistance.

While there are differences among the states, the most common method of distribution is through local community action programs (CAPs). In many instances, payments are preferred to be made directly to the utility. In cases where heating costs are included in the rent, payments are made directly to the individual to offset the portion of rent related to heating.

LIHEAP funds can be used for assistance with heating, cooling, energy crisis intervention, and weatherization and energy related home repairs. Households are eligible if the income does not exceed the greater of 150% of the federal poverty level or 60% of the state median income. The individual states can set income limits as low as 110% of the poverty level. The federal law requires that the households with the highest home heating costs relative to income and household size receive the greatest benefits.

Possible Applications in Bulgaria

To whom should subsidy go

Under the present price controls in Bulgaria, maximum and minimum prices are set by the State. The current price maximums do not necessarily reflect the full cost to provide gas service. In effect the government is providing a subsidy to all customers, whether they are in need or not. A more efficient program would allow natural gas prices to be set at levels that fully recover the costs to provide service. Subsidies could then be provided to low income customers that need assistance. Customers that are not in need of assistance would no longer receive subsidies from the government, and gas could be priced at levels that truly reflect costs. Government funds that had previously been provided to support all gas prices would be freed up for programs where they may be needed more urgently.

Subsidies should be provided for and administered at the local level by the utility or local welfare agencies. Assistance could be provided through reduced utility bills (percentage reduction) for eligible customers. Such a program would probably require approval of the Council of Ministers and/or the State Public Commission on Prices of Power Carriers. Depending on the extent of subsidy required, the utility could make up lost revenues through higher rates to other customers or the government could reimburse the utility for the cost of low income assistance programs, eliminating the need to increase prices to other customers.

Determining Eligibility

Under Social Welfare Act Regulations social service centers are allowed to provide lists of individuals and families to suppliers. It appears that lists of eligible customers (that meet specified income requirements) could be supplied to local gas distributors if needed. The head of the local social care center can revise the level of support monthly in response to price changes of energy carriers. The mechanisms appear to already be in place to achieve income verification, eligibility, and the transfer of the necessary information to the local gas utility.

Levels of Assistance

Bulgaria has established minimums use levels for others fuels under the Social Welfare Act Regulations. Using the already determined levels for other utilities equivalent allowances for natural gas could be developed as well, based on heat

content of various types of fuel. A mechanism for differing prices already exists between imported and domestic gas, depending on the caloric content.

Other Issues

Additional outreach programs such as conservation education programs, budget billing and arrearage forgiveness should also be considered as a part of an overall low income household assistance program. These programs could be established at the national level, but administered locally through the utilities and the Municipal Office of Social Support.

Conclusions and Recommendations

The mechanisms are in place in Bulgaria to provide assistance to low income households for natural gas. The Social Welfare Act contains many of provisions and mechanisms similar to the LIHEAP program in the United States. For example, it will allow for the determination of eligibility based on income and includes mechanisms for distribution of assistance at the local level.

While there are no specific provisions for natural gas as a supported fuel, these provisions could be added. Further amendments may also be needed to allow for payments in only the colder winter months of heating costs are all that are to be subsidized.

Allowing the utilities to establish rates and charges at the cost of service will provide a better economic price signal to the customers that can afford service.

**EAPS STARA ZAGORA MUNICIPAL BOILER
CONVERSION PROJECT**

ASSESSMENT REPORT

**Submitted by:
Chemonics International Inc.**

ANNEX F

EAPS STARA ZAGORA MUNICIPAL BOILER CONVERSION ASSESSMENT

A. Background

In 1995, the Environmental Action Programme Support (EAPS) project of the United States Agency for International Development (USAID) began assisting the Municipality of Stara Zagora (MSZ), Bulgaria, to convert the boilers in municipal buildings from traditional fuels to natural gas. Under the terms of the assistance, EAPS developed the technical specifications and financed the conversion of boilers in 21 municipal facilities, including hospitals, schools, day care centers, recreation facilities and the municipal office building. MSZ contracted for the conversions. A gas distribution company installed the gas-supply network under the city's streets. Conversion of all 21 facilities was completed and certified during the summer of 1998. Some of the facilities have now begun using gas; all will be doing so with the beginning of the 1998-1999 winter heating season.

Projects of this nature, involving switching to cleaner fuels in urban areas with poor air quality, were identified by the Environmental Action Programme for Central and Eastern Europe as one of the highest priorities for environmental investment in the region.⁵ USAID hopes that this project can serve as a model that will assist other municipalities in Bulgaria and elsewhere in considering and implementing similar fuel conversion programs. This report estimates the benefits that will be achieved as a result of the Stara Zagora gas conversion project.

B. Technical Aspects of the Gas Conversion Project

Prior to 1995, natural gas was not available in Stara Zagora. The leading fuels used for industry and for residential, commercial, and institutional heating included: mazut (a high sulfur, heavy fuel oil), light diesel oil (lower sulfur and comparable to distillate fuel oil in the U.S.), lignite (a high sulfur, low grade coal), wood, and electricity (from nearby lignite-fired power plants). In late 1994 and early 1995 a natural gas pipeline was built to the industrial area just south of the city, and several industrial plants were connected and converted from mazout and diesel oil to natural gas. In 1997 the pipeline was then extended from the industrial area to form a loop through the residential and commercial area of the city and then further to the Zagorka Brewery to the north of the city. During 1998, 21 municipal facilities formerly heated by boilers burning light diesel oil were connected to the gas pipeline, including distribution piping, gas meters, pressure regulating devices and safety equipment. Modifications were made at each facility's boilers to the fuel feed equipment, burners, and firebox to allow use of natural gas in addition to diesel oil.⁶ Table 1 lists the 21 converted facilities and

⁵ Environment for Europe. *Environmental Action Programme for Central and Eastern Europe*, Document submitted to the Ministerial Conference. March 30, 1993.

⁶ Combined gas/oil burners were installed that will permit future use of whichever fuel is most cost advantageous.

their estimated annual usage of diesel oil prior to conversion. At virtually all the facilities, the boilers are used to heat the buildings during the heating season, approximately from October through March. At a few facilities, some boilers are used to a small extent during the non-heating season for hot water needs.

Table 1. Fuel Use Prior to Gasification

Name of Source	(a) Annual Fuel Consumption in “Normal” Year (tons)	(b) Annual Fuel Consumption in Low-Fuel-Use Year (tons)
Secondary School “Ivan Vazov”	316	97
9 th Primary School “Veselin Hantchev”	216	69
High School # 10	132	75
Day-care Center # 29	55	27.5
Day-care Center # 9	55	24
Day-care Center for Orphans “Nadezd”	74	32
Day-care Center # 6	140	24
Stara Zagora Municipality	317	127
City Theater	158	80
Secondary School “Vasil Levski”	112	99
Foreign Languages School “Romen Rolan”	348	442
Swimming Pool, 13 Graf Ignatiev St.	222	60
Day-care Center # 20 “Mir”	106	40
Day-care Center # 2	53	29.5
Day-care Center # 7	53	24
Day-care Center # 5	55	52
5 th Primary School	212	80
Day-care Center # 35	63	40
Day-care Center # 31 “Slantze”	53	43.5
Regional Hospital “Stojian Kirkovitch”	3036	2000
Polyclinic # 11	689	1077
TOTAL	6465	4543

Two estimates are provided for pre-conversion fuel use. Column (a) in Table 1 is an estimate developed by POVVIK-EP Ltd., an engineering consulting firm that supported EAPS on the gasification project, of the fuel that would be needed to heat each building at a reasonable level for public use over the entire heating season. The estimate is based on calculations involving the size and condition of each building and Stara Zagora’s climate. The total of 6,465 tons of diesel oil represents the amount that might be used in a “normal” year—a year in which the municipality could afford to purchase sufficient diesel oil to keep the 21 buildings well heated. In the recent years of economic difficulty, the MSZ has been able to afford much less than this amount of fuel, and

buildings have often been closed and/or under-heated. Column (b) in Table 1 shows about 30 percent lower fuel consumption. It represents the average of two different estimates of fuel use in recent years when financial difficulties have curtailed fuel use.⁷ These estimates still may overstate actual recent fuel use at the facilities. Nevertheless, we will assume that columns (a) and (b) provide upper and lower estimates of the pre-conversion fuel use at the facilities, and we will use this range in our calculation of the benefits from the conversions.

Since most of the converted facilities have only recently been approved to begin burning natural gas, there is no experience yet on the amount of gas they will use during the heating season. We have estimated the amount of natural gas they will burn by calculating the heat output formerly produced by fuel oil at the 21 sources and determining the amount of gas needed to meet those energy requirements. In making these calculations, we assumed somewhat greater efficiency for the converted gas-fired boilers relative to oil-fired boilers (83 percent efficiency for gas vs. 80 percent for oil).⁸ The results of these calculations are presented in Table 2.

⁷ The two estimates derive from the MSZ and from the gas supply utility. Two facilities have higher fuel use in the “low fuel-use” than the “normal” year estimates for these facilities. “Low fuel use” applies to the aggregate total of fuel used in the 21 facilities because individual use patterns can fluctuate.

⁸ The higher efficiency of the boilers when fired with gas results from three factors. First, the conversion involved replacing old, deteriorated oil nozzles and burners with new gas burners. Second, for a variety of reasons having to do with thermodynamics and optimal air-fuel mixtures, the practical maximum efficiency of a given boiler is typically higher when gas-fired than when oil-fired. Third, much less operator attention and burner maintenance is required to keep a gas-fired boiler operating at near its maximum efficiency than is required to operate an oil-fired boiler near its maximum efficiency. Reports from Stara Zagora suggest that boilers are generally poorly maintained and supervised. (See, for example, the consultants’ reports to the U.S. EPA after visiting Stara Zagora’s major industrial facilities. United States Environmental Protection Agency, Region II and Republic of Bulgaria Ministry of Environment and Waters. *Stara Zagora Air Management Program*. December, 1997). Lack of maintenance will be more problematic for an oil-fired boiler than for one that is gas-fired. The gas conversion has provided the city with low maintenance rather than high maintenance boilers, which will likely mean a substantial improvement in the actual boiler efficiency that is realized over time. On balance, we believe that the efficiency gain assumed upon conversion to gas (improving from 80 percent efficiency to 83 percent) is likely conservative. This efficiency gain assumption matches that made in an earlier, prospective benefit-cost analysis of the Stara Zagora gas conversion project (Michael Cooney, Chemonics International Inc. “Municipality of Stara Zagora Gas Conversion Project Cost/Benefit Analysis.” Submitted to USAID/ENR/EEUD/ENR and OAR/Bulgaria. August, 1997.)

Table 2. Estimated Annual Use of Oil or Natural Gas at the 21 Facilities⁹

	Oil Used (MT)	BTU From Oil	Heating Output (BTU)	BTU Needed From Gas	Gas Needed (m ³)
Normal year	6465	283.2 x 10 ⁹	226.5 x 10 ⁹	272.9 x 10 ⁹	7.356 x 10 ⁶
Low fuel-use year	4543	199.0 x 10 ⁹	159.2 x 10 ⁹	191.8 x 10 ⁹	5.169 x 10 ⁶

B1. Categories of Benefits from the Gas Conversion

We anticipate the following varieties of benefits:

- *Reductions in air pollution and associated health risks for city residents.* Natural gas is a cleaner burning fuel than the light diesel oil formerly used to heat the municipal facilities. In addition, a boiler can typically operate more efficiently (converting a greater fraction of its heat input into usable heat output) when fired with natural gas than with fuel oil. Both of these factors will result in reduced emissions of particulate matter, SO_x, NO_x, metals and other air pollutants. With some simple modeling, we will project the impact of these reduced emissions on ambient air pollution concentrations in the city and ultimately on the number of respiratory illnesses expected from the air pollution.
- *Reductions in greenhouse gas (GHG) emissions.* Natural gas is a less carbon-intensive and GHG-intensive fuel than is diesel oil. For this reason, and because of the efficiency gain, the gas conversion will result in reduced emissions of GHGs. This benefit will accrue globally, not only to the Stara Zagora region.
- *Municipal budget savings.* Although natural gas is currently more expensive than light diesel oil, the recent sharp decline in fuel prices will allow the MSZ to reduce its fuel expenditures while maintaining the same or better level of heat in the buildings. Further savings are possible because of the efficiency gain with gas-fired boilers.
- *Improvements in service.* Lower fuel prices, boilers that are easier to maintain, and the reliability of gas supplies will result in better and more dependable heat in the winter for hospital patients, children in day care, students, municipal employees, and citizens using municipal facilities.
- *Institutional benefits.* By participating in the conversion project, the municipality has gained valuable experience in regulating private utility suppliers and in evaluating and managing environmental projects. MSZ will have many future opportunities to employ these skills.
- *Other benefits.* Availability of natural gas in Stara Zagora makes the city attractive for new industry. Extension of the gas pipeline into the city makes possible further gas conversions in the industrial, commercial, and residential sectors.

⁹ Assumptions: Light diesel oil contains 43.8 million BTU/MT, and has 80 percent efficiency in obtaining heating output from diesel oil burned in boilers. Natural gas contains 37,100 BTU/m³, and has 83 percent efficiency in obtaining heating output from natural gas burned in boilers.

Each of these benefits will be discussed below in more detail.

B2. Reductions in Air Pollution and Associated Health Risks in the City

Perhaps foremost among the various benefits of the municipal gasification project are reduced local air pollution and the resulting reduction in air pollution-related illnesses among city residents. We estimate these benefits in three steps. First, we estimate the reduction in emissions of various air pollutants resulting from the conversions. Second, using air dispersion models, we estimate the extent to which these reduced emissions will lower the ambient concentrations of key pollutants in the city's air. Third, using established epidemiological relationships between ambient concentrations of air pollutants and the rates of respiratory morbidity and mortality among individuals exposed to these pollutants, we estimate the reduction in health damages resulting from the reduced ambient concentrations of the pollutants.

In the initial step in this analysis, we address emissions of many different air pollutants: particulate matter (PM), sulfur oxides (SO_x), nitrogen oxides (NO_x), carbon monoxide (CO), metals, and organic compounds. For the further step in the analysis—dispersion modeling and health effects estimation—we focus only on PM and SO_x. We judge these two air pollutants to be, by far, the most important in Stara Zagora in terms of health and other impacts. Ambient modeling of the pollutants other than these two would require sophisticated techniques beyond the resources available for this analysis, and would likely eventually show health impacts much less than those at stake for PM and SO_x. Our decision to focus the dispersion and health effects analysis on PM and SO_x is consistent with previous judgments in studying air pollution in Stara Zagora by Bulgaria's Ministry of the Environment and by the U.S. EPA.¹⁰

Emissions reductions. Natural gas is a much cleaner burning fuel than light diesel oil, producing on an energy-equivalent basis substantially lower emissions of PM, SO_x, and nearly all other harmful air pollutants. In addition, the conversion of the 21 facilities results in efficiency gains so that the needed energy input of gas is about 4 percent lower than that needed from oil.

We estimated the expected annual air pollution emissions from the 21 sources before and after the conversion as follows:

1. As shown in Table 2, we assumed the sources burned 4543 to 6465 MT of diesel oil annually prior to conversion, and 5.17 to 7.36 million cubic meters of natural gas annually after the conversion. The range of figures represents the difference between a low fuel-use year and a normal year. The fuel was assumed to be used over a 6-month heating season, from October through March.

¹⁰The Bulgarian environmental impact statement evaluating the Stara Zagora conversion focused on four pollutants: PM, SO_x, NO_x, and CO_x. The study found that current ambient levels of PM and SO_x were far above acceptable health-based levels, while NO_x concentrations only slightly exceeded health-based standards and CO_x was of concern because of global warming rather than health impacts. The reductions of PM and SO_x were viewed as the most important benefits to be obtained from the project. The EPA study evaluated emissions and control options for six pollutants, including PM and SO_x. The study found that PM and SO_x were the pollutants present in Stara Zagora at levels most in excess of their health-based ambient standards.

2. We obtained data on the characteristics of the Bulgarian fuels. Bulgarian light diesel oil is virtually identical in composition (0.5 percent sulfur by weight, among other characteristics) to what is internationally known as distillate oil (fuel oil #2). Bulgarian natural gas is virtually identical in composition to natural gas worldwide, except for being very slightly higher in sulfur content.
3. We assumed that the boilers at the 21 sites included no pollution-control devices. Emission factors (in grams of pollutants emitted per amount of fuel input) for uncontrolled boilers for combustion of distillate oil and for natural gas were drawn from the U.S. EPA's compilation of emission factors.¹¹ EPA's emission factors for combustion of natural gas were adjusted slightly to account for the specific percentage of sulfur found in Bulgarian gas.
4. We multiplied the amount of each fuel burned annually by the 21 sources by the fuel-specific emissions factors in order to estimate annual emissions of the various air pollutants before and after the conversions.

The resulting estimated annual air-pollution emissions are shown in Table 3.

Table 3. Annual Emissions from the 21 Municipal Sources (MT)

		PM	SO _x	NO _x	CO	Metals	VOCs
Typical year	light diesel oil	3.00	65.5	18.4	4.55	.0075	.637
	natural gas	0.89	0.30	11.7	9.83	.0042	.643
Low-fuel-use year	light diesel oil	2.11	46.0	12.9	3.20	.0053	.448
	natural gas	0.62	0.21	8.2	6.90	.0030	.452
percent reduction		70	99.5	36	116 (increase)	44	1 (increase)

As shown, converting to natural gas at the 21 municipal sources will nearly eliminate these sources' emissions of SO_x, and will cut emissions of PM by 70 percent, emissions of NO_x by 36 percent, and emissions of metals by 44 percent. VOC emissions will remain about the same, while CO emissions will increase by 116 percent. We do not believe the projected increase in CO emissions is a significant problem. CO is likely far less important than PM and SO_x, which are reduced dramatically by the conversion to natural gas.¹²

¹¹ EPA's fifth edition of AP-42, a compendium of emissions factors, is available on-line at www.epa.gov/ttnchie1/ap42toc.html

¹² CO is a pollutant that is generally thought to cause only acute health effects. Short-term exposures to high levels of it can produce effects ranging from difficulty in concentrating to headaches, angina pain in heart patients, and at an extreme, asphyxiation and death. CO disperses rapidly. Ambient concentrations of CO can build to levels sufficient to begin to cause these health impacts only in very localized areas subject to very heavy emissions, such as, for example, a heavily trafficked intersection during rush hour. In these areas,

Although conversion of the 21 municipal sources will significantly reduce emissions of PM and SO_x, municipal sources represent only a small fraction of all sources emitting these pollutants in and near Stara Zagora. Industry, residential heating, and perhaps motor vehicles emit far larger amounts of these pollutants. Conversion of these more important sources to cleaner fuels could have a very large impact on Stara Zagora's high and unhealthy ambient concentrations of PM and SO_x. We believe, in fact, that several elements of the municipal gas conversion project—extension of the gas pipeline into the city proper, development of municipal procedures for franchising and regulating natural gas supply, and assurance of an initial market for gas in the city—will facilitate future conversion to gas by the larger industrial, commercial, and residential heating sources in the city. The immediate impact of the municipal gas conversion on PM and SO_x concentrations in the city is limited, but the municipal conversion makes it easier for much more significant conversions to occur in the future.

To put emissions from the 21 municipal sources into perspective, Table 4 presents estimates of annual PM and SO_x emissions by the major industries affecting Stara Zagora's air.

Table 4. PM and SO_x Emissions in Stara Zagora by Sector in A Typical Year

	21 Municipal Sources (pre-conversion)	Industrial Sources	Residential Heating
PM emissions (MT)	3.0	206.8	Not Estimated
SO _x emissions (MT)	65.5	2059.2	Not Estimated

Before conversion to gas, SO_x emissions from the 21 municipal sources were only 3 percent as large as SO_x emissions from Stara Zagora's industry, while municipal source PM emissions were only 1.5 percent as large as PM emissions from industry. The industrial emissions estimates were developed by EPA and the Bulgaria Ministry of Environment and Waters in their December 1997 report on the Stara Zagora Air Management Program.¹³

CO concentrations will fall to minimal levels soon after the heavy emissions diminish. Continuing low level CO emissions from sources such as boilers dispersed throughout the city would not be expected to yield ambient concentrations of CO anywhere near those sufficient to begin to induce adverse health impacts. EPA's modeling of CO emissions from Stara Zagora's major industrial sources (which emit many times as much CO as the 21 municipal facilities after conversion to gas) found that even these large CO emitters caused ambient CO concentrations that only began to approach the thresholds at which very mild adverse impacts could be expected. PM and SO_x, in contrast, are thought to lead to adverse health effects, both acute and chronic, through low level exposures. Ambient concentrations of these pollutants in Stara Zagora are presently well above recommended limits, and even small additional increments to long-term exposure to these pollutants will significantly increase the rates of morbidity and mortality from respiratory illnesses in the city.

¹³ These emissions estimates are based on the operation of industrial facilities during 1994, and are representative of facility performance during the 5 to 7 preceding years. The majority of the industrial emissions derived from boilers burning mazut, a high sulfur, heavy fuel oil. A small minority of the industrial facilities had begun using natural gas by the time the EPA emissions estimates

It is not possible to estimate emissions from residential heating in the city, as there is neither reliable information on the amount of energy used for residential heating, nor are there accurate data on the fraction of energy use supplied by each of the various fuels. Many boilers formerly used to heat residential apartment buildings have deteriorated and are no longer operational. Heating of residential apartments is achieved now through a mix comprising unknown proportions of electric space heaters in individual apartments (which result in effect in emissions at the nearby power plants that provide the electricity) and oil-fired boilers in some apartment buildings. Many families not living in apartments (perhaps 15 to 20 percent of the city total, mostly in the suburbs, villages and gypsy quarters) still rely on lignite or wood. For rough perspective, the gas utility has estimated that adequate heating for each of the approximately 50,000 households in the city would require about 1,000 m³ of natural gas each winter. If so, total annual gas use for residential heating would be about 50 million m³, or 7 to 10 times more than the projected annual gas usage for the converted municipal facilities. Again, more energy use and emissions are at stake in the residential heating sector than are involved in the 21 municipal facilities.

In total, we believe that the PM emissions addressed by the municipal conversions likely constitute less than 1 percent of citywide PM emissions, while the SO_x emissions addressed by the conversions likely constitute 1 to 2 percent of citywide SO_x emissions. Because the conversion of Stara Zagora municipal facilities to gas has addressed only a small proportion of air pollution emissions in the city, only a modest improvement in the city's ambient air quality can be expected. The municipal conversion, however, provides a significant impetus to achieving future much larger conversions to gas by industry and residential heating.

Reductions in ambient concentrations of PM and SO_x. To estimate the impact of converting the 21 municipal sources to gas, we used a simple air-dispersion model for predicting average annual ambient concentrations. EPA's SCREEN3 is the latest version of a model designed to estimate the air quality impact of emissions from stationary sources.¹⁴ Although its data input requirements are relatively modest, in EPA's view the model is sufficiently accurate to be used in evaluating the impacts of changes in source emissions pursuant to the U.S. Clean Air Act. For comparison purposes, we also applied an older air-quality model suggested by the World Health Organization (WHO) for conducting rapid environmental assessments in urban areas.¹⁵

Rather than modeling the air-quality impacts of PM and SO_x emission reductions from each of the 21 converted municipal sources individually, we chose to simulate the sources instead as a single

were developed.

We limited our emissions tally to industrial facilities located within 4.5 kilometers from the city center. This approach includes all the industrial facilities that significantly affect the city's air quality. This tally excludes emissions from the Maritsa power plants and the Agrobiochim fertilizer plant. Although these excluded sources are by far the largest sources of SO_x and PM in the region, they are located some distance from the city (11 to 45 kilometers from the center of town) and were shown in the EPA modeling not to be among the leading contributors to air quality impairment in the municipality.

¹⁴ U.S. EPA. "Screening Procedures for Estimating the Air Quality Impact of Stationary Sources, Revised." EPA-450/R-92-019. 1996. A personal computer-based version of the model is available for download from <http://www.epa.gov/ttn/scram/>.

¹⁵ World Health Organization. Management and Control of the Environment. 1989.

aggregated area source covering 7 square kilometers (the approximate size of the area in which the 21 converted facilities are located). Starting with our estimates of total annual emission reductions for PM and SO_x from the 21 sources and with other required data,¹⁶ we executed the two models and calculated the resulting reduction in annual average ambient concentrations throughout the city. Estimates were made for both a “typical” year and a “low fuel-use” year. Table 5 shows the results for the SCREEN3 model, showing the impacts on a population-weighted basis for the city as a whole.¹⁷

Table 5. Ambient Concentrations Due to Emissions From the 21 Facilities, Before and After Conversion (ug/m³, Annual Average)

SCREEN3	PM before	PM after	Change in PM	SO _x before	SO _x after	Change in SO _x
Typical year	0.043	0.013	-0.030	0.936	0.004	-0.932
Low-fuel-use year	0.030	0.009	-0.021	0.658	0.003	-0.655

At less than 1 ug/m³ change for both pollutants, the projected reductions in ambient concentrations are small. This is because, as our evaluation of the emissions data suggested, conversion of the 21 municipal sources has addressed only a small portion of the total PM and SO_x emissions in the city. The ambient data is also consistent with the emissions data in indicating that the conversion has reduced the impact specifically from the 21 sources significantly; by 65 percent or so for PM and by more than 99 percent for SO_x.

These ambient impacts of the gas conversion can be compared with the monitored ambient levels of PM and SO_x in the city. For the Stara Zagora air-quality management project, EPA collected data from 10 monitoring stations in the region from 1993 to 1996. Three of these monitoring sites are located within 1.5 kilometers of the center of the city. Table 6 shows the annual average ambient concentrations for PM and SO_x reported at these monitoring stations. The range of ambient averages was considerable: from 41 to 353 ug/m³ for PM, and from 29 to 91 ug/m³ for SO₂.

¹⁶ More detailed information on the inputs for the air quality models, including meteorology, stack height, etc. is presented in Annex A.

¹⁷ Annex A also presents information on how converting the 21 sources to gas affects the ambient concentration of air pollutants differently in different parts of the city.

Table 6. Reported PM and SO₂ Levels in Stara Zagora (ug/m³, Annual Average)

Year	Particulate Matter			Sulfur dioxide		
	Station #1	Station #8	Station #10	Station #1	Station #8	Station #10
1993	176.6	342.5	NA	51.4	91.9	NA
1994	175.2	353.0	NA	46.6	85.1	NA
1995	203.7	291.1	41.1	28.9	62.1	34.5
1996	NA	NA	67.7	NA	NA	52.4

These monitored pollutant concentrations indicate unhealthy air in Stara Zagora. The levels in Stara Zagora commonly exceed the WHO or U.S. standards established to protect human health:

- *For PM:* The WHO guideline is 60 to 90 ug/m³, while the pre-1987 U.S. standard (subsequently replaced by standards addressing fine particles only rather than PM generally) was 75 ug/m³. PM concentrations in Stara Zagora appear to approach these standards at monitoring site #10, and substantially exceed the standards at the two other sites.
- *For SO₂:* The WHO guideline is 40 to 60 ug/m³, and the U.S. standard is 80 ug/m³. Ambient concentrations of SO₂ in Stara Zagora approach or exceed these standards at all three of the monitoring sites.

Combining the information from Tables 5 and 6, we estimate that the conversion of the 21 municipal facilities will reduce overall average PM concentrations in the city by less than 0.1 percent. Average SO₂ concentrations will be reduced by 0.7 to 3.2 percent, depending on the location in the city and whether a “normal” year or a “low fuel-use” year is assumed.

Damages Caused by PM and SO₂

Particulate matter (PM) represents a broad variety of substances that exist as discrete particles suspended in the air. Particles range from large ones that fall out of the atmosphere quickly to small ones that remain suspended indefinitely. The small particles are most hazardous to health, as they can be inhaled deep into the lungs and lodge there, aggravating existing respiratory and cardiovascular disease and prompting other adverse biological responses. Many epidemiological studies have found a statistical relationship between the ambient concentration of PM to which a population is exposed and the rates of respiratory morbidity and mortality occurring in the population. PM may also cause significant economic damages, primarily soiling and reduction of visibility, in addition to its health impacts.

Sulfur dioxide is an irritating gas with a pungent odor and taste. It is highly soluble in water (forming sulfurous acid) and can be oxidized to sulfur trioxide (forming sulfuric acid in water). At levels typically well above those occurring in Stara Zagora, sulfur oxides can cause narrowing of the airways and difficulty in breathing, particularly for asthmatics. Longer-term exposures to lower levels of sulfur dioxide (even to levels well below health-based standards) have been linked by epidemiological studies to increased mortality and hospital admissions from respiratory diseases. Sulfur oxides commonly absorb onto particles in the air, and the resulting suspended sulfates are thought responsible for much of the adverse health impacts from chronic

The alternative WHO air-dispersion model projects air quality impacts from the gas conversions that are approximately six times higher than these estimates from SCREEN3. For several reasons, we give more credence to the lower impact estimates from SCREEN3.¹⁸ Nevertheless, the higher estimates generated by

the WHO model suggest that the true air quality improvements from the conversions might well be larger than those we are estimating based on SCREEN3: less than 0.1 percent reduction in ambient PM levels and 0.7 to 3.2 percent reduction in ambient SO₂ levels.

Reductions in Health and Other Damages From PM and SO_x. The reduced ambient concentrations of these pollutants throughout the city will reduce several sorts of adverse impacts suffered by city residents. We can estimate some of these benefits.

To estimate the reductions in health risks associated with reduced concentrations of PM and SO₂ in Stara Zagora, we used a method developed for the World Bank that has been applied in several other cities (e.g., Jakarta, Indonesia; Santiago, Chile; and Cairo, Egypt).¹⁹ From the epidemiological literature, this method developed statistical relationships estimating the changing rate at which health effects occur among an exposed population in response to a change in level of air pollution.

¹⁸ Although the WHO model has somewhat less resolution than the SCREEN3 model, it is capable of calculating annual average ambient concentrations resulting from area source emissions, like SCREEN3. Using the same data on emissions, size of the city, number of months the boilers operate during the year, meteorological conditions, and average wind speed, the WHO model generated annual average ambient concentration levels that were approximately six times higher than those produced by SCREEN3. We view the SCREEN3 model results as likely more accurate for two reasons:

1. SCREEN3 has been updated recently and is currently used by EPA in making judgments on the impacts of new or altered pollution sources. The WHO model has not been updated since 1989 and is no longer maintained by WHO. SCREEN3 also incorporates more site-specific information than does the WHO model, which relies extensively on generic default assumptions.
2. In light of citywide PM and SO_x emissions data and ambient concentration levels, the WHO model's estimated impacts from converting the 21 municipal sources appear too high. Since the 21 municipal sources prior to conversion probably contributed less than 1 percent of Stara Zagora's total emissions of PM and 1 to 2 percent of SO_x, it seems unlikely that converting them should reduce ambient concentrations of SO₂ by 5 to 10 percent, as suggested by the WHO model results. The ambient concentration figures generated by SCREEN3 appear to be more consistent with available emissions and ambient concentration data for the city as a whole.

¹⁹ Ostro, Bart. "Estimating Health Effects of Air Pollution: a Methodology with an Application to Jakarta," 1994. "Review of Methods Proposed and Used for Estimating the Population Health Risks of Exposure to Urban Air Pollution," 1995. Reports for the World Bank, Washington, D.C.

The relationships for PM project these health effects: 1) premature deaths;²⁰ 2) lower respiratory illnesses among children; and 3) restricted activity days.²¹ For SO₂, the relationships project: 1) premature deaths; 2) cough and upper respiratory symptoms in children; and 3) upper respiratory irritation in adults.

Annex B presents the calculations applying Ostro's relationships to the reduction in air pollution in Stara Zagora expected as a result of the municipal gas conversions. We estimate that converting the 21 municipal facilities will reduce air pollution-related health effects in the city by the following amounts:

- The reduction in ambient PM levels will avoid the following number of health effects annually among the population of Stara Zagora:
 - R .017 to .051 premature deaths
 - R 0.3 to 1.4 cases of lower respiratory illness among children
 - R 7 to 23 restricted activity days among adults

- The reduction in ambient SO₂ levels will avoid the following number of health effects annually among the population of Stara Zagora:
 - R 0.3 to 3.0 premature deaths (this represents a reduction of approximately .01 to .1 percent in the city's overall mortality rate)
 - R 0.3 to 1.0 cases of upper respiratory cough/illness among children
 - R 220 to 938 cases of upper respiratory irritation among adults

These estimates of avoided health effects should be regarded as only approximate, due to the substantial uncertainty in the underlying epidemiological relationships. The avoided health effects could also perhaps be several times higher than these estimates if the conversions reduce ambient air pollution concentrations by amounts more consistent with the predictions from the WHO model rather than the SCREEN3 model.

We are unable to satisfactorily quantify the impact of the reduced PM and SO_x concentrations on concerns other than human health, such as materials damage, visibility, soiling, forests, and lakes. Estimates from another study, however, provide a very rough perspective on what the benefits in these other areas might be. The World Bank has studied the impacts from air pollution in Poland, and estimated that urban emissions of PM, SO₂, and NO_x from low stacks there cause economic

²⁰ Premature deaths are those that occur earlier than they otherwise would have, as a result of exposure to air pollution. These deaths typically involve individuals who are vulnerable because of pre-existing health problems, and air pollution exposure hastens their death.

²¹ Restricted activity days include all days on which activities are significantly restricted due to illness. The affected individual may stay home from work, may rest in bed, or may work while ill at less than normal capacity.

damages of at least \$720 per ton of PM, \$650 per ton of SO₂, and \$460 per ton of NO_x²² If these figures are extrapolated to Stara Zagora, the emissions abated by the gas conversion would avoid annual damages of \$33,000 to \$49,000 from these three pollutants.

B3. Reduction in Emissions of Greenhouse Gases

In addition to reducing emissions of pollutants that cause local damages to health and other values, converting the 21 municipal facilities to natural gas will yield global benefits in terms of reduced emissions of greenhouse gases (GHGs). As a less carbon-intensive fuel, natural gas produces a lesser amount of GHGs than does diesel oil for each unit of energy burned. In addition, natural gas-fired boilers are more efficient than oil-fired burners, so fewer BTUs of fuel input are needed to obtain the same energy output. Table 7 shows the GHG emission reductions achieved through conversion of the municipal sources.²³

Table 7. GHG Emission Reductions (MTCE/year)

	GHGs from light diesel oil	GHGs from natural gas	GHG reduction	Percent reduction
Typical year	5,650	3,949	1,701	30.1
Low fuel-use year	3,970	2,775	1,195	

The resulting annual reduction in GHG emissions, 1195 to 1701 MTCE, is equivalent to taking approximately 900 to 1325 typical American cars off the road, or to the carbon storage that would be provided by 1200 to 1700 acres of healthy forest (roughly 500 to 700 hectares, an area approximately equal to the entire built-up city area of Stara Zagora north of the industrial zone).

B4. Impacts of the Conversion to Gas on the Municipality's Budget

This issue is difficult to analyze conclusively because of recent large fluctuations in the relative prices of diesel oil and natural gas in Bulgaria. The prices of these fuels are set by the Bulgarian national government, within broad ranges dictated by world energy markets. Energy pricing is a matter of some controversy in Bulgaria, and the likelihood of further changes in domestic energy policies and world markets makes the future relative prices of diesel oil and natural gas unpredictable.

An earlier economic analysis prior to completion of the gas conversion project found that the energy-equivalent price for natural gas in Stara Zagora was less than the price for diesel oil, and the

²² The World Bank. *Environmental Assessment of the Gas Development Plan for Poland*. 1993.

²³ The calculation uses GHG emission factors for full combustion of the different fuels. Source: U.S. Energy Information Administration. *Emissions of Greenhouse Gases in the United States 1987-1994*. DOE/EIA-0573. October, 1995. Emissions of each GHG (e.g., carbon dioxide, methane, etc.) is weighted by its global warming potential and then all the GHGs are aggregated into a single measure expressed in metric tons of carbon equivalents (MTCE).

conversion of the 21 facilities would significantly reduce the MSZ's costs for fuel.²⁴ Since this earlier analysis, however, Bulgarian diesel oil prices have declined very sharply while natural gas prices have declined moderately. The relative prices of gas and oil have shifted, and natural gas is now significantly more expensive than diesel oil. At today's relative prices, the gas conversion has the effect of increasing the MSZ's fuel costs.

Table 8. Shift in Relative Prices of Diesel Oil and Natural Gas

	Mid- 1997		Current	
Diesel Oil	301,300 leva/MT	\$4.12/MMBTU	150,000 leva/MT	\$2.05/MMBTU
Natural Gas	261.539 leva/m ³	\$4.22/MMBTU	185.206 leva/m ³	\$2.99/MMBTU

Natural gas in mid-1997 was about 3 percent more expensive than diesel oil on an equivalent energy basis. This price differential was small enough so that the 4 percent efficiency gain upon conversion from oil to gas would make heating the buildings with gas less expensive than heating them with oil. Now, however, the situation has changed and natural gas is 46 percent more expensive than diesel oil.

Based on the quantities of diesel oil and natural gas that we estimated to be used before and after the conversions (see Table 2) and current prices for the fuels, we estimate that the conversion will increase the MSZ's fuel costs as follows:

Table 9. Impact of the Gas Conversion on the Municipality's Annual Fuel Costs

	Diesel Oil Cost	Natural Gas Cost	Change in Cost	Percent Increase
Normal year	\$581,000	\$817,000	+ \$236,000	40.6
Low fuel-use year	\$408,000	\$574,000	+ \$166,000	

The increased fuel cost resulting from the conversion amounts to roughly 0.7 to 1.0 percent of the MSZ's total 1998 budget of nearly 40 billion lev (about \$25 million).

This is only a part of the picture, however. While the effect of the conversion (at current relative gas and oil prices) is to increase the municipality's fuel costs, this impact is more than offset by the recent sharp decline in the price of oil. The municipality's spending on heating the converted facilities is likely to be lower during the winter of 1998-1999, despite the conversion, than was spending on the same facilities during the winter of 1997-1998. At the beginning of the 1997-1998 heating season, diesel oil prices were approximately 301,300 (\$172.17) per MT compared with 150,000 (\$89.90) per MT currently. Table 10 estimates the change in the municipality's heating costs from the past winter to the upcoming one.

²⁴ Cooney, op cit. 1997.

Table 10. Municipal Heating Costs, 1998-1999 vs. 1997-1998

	1997/1998 Costs (Oil at \$172.17/MT)	1998/1999 Costs (Gas at \$.111/m³)	Change in Cost	Percent Decrease
Assuming normal fuel use	\$1,113,000	\$817,000	- \$296,000	26.6
Assuming low fuel use	\$782,000	\$574,000	- \$208,000	

With the combination of declining energy prices and the conversion to gas, the reduction in heating costs for the upcoming winter relative to the past one will amount to a savings of roughly 0.8 to 1.2 percent of the MSZ's total 1998 budget.

Fuel prices in Bulgaria have been changing rapidly, and it is impossible to predict what they will be in the long run. The government's pricing of natural gas in particular has been strongly criticized by both Bulgarian and foreign organizations (including the IMF and the World Bank). At present, the Bulgarian Committee on Energy, assisted by the PHARE Program, is drafting a new methodology for determining natural gas prices that is expected to be implemented by the beginning of 1999. We will not hazard a guess as to the likely eventual level of gas and diesel oil prices in Bulgaria, nor the relationship between them. In both the U.S. and Western Europe for the past several years, natural gas and fuel oil have cost about the same on an energy-equivalent basis. If this situation were eventually to prevail in Bulgaria, the conversion project would ultimately reduce the MSZ's fuel costs modestly (by about 4 percent) because of the greater efficiency in firing the boilers with gas relative to oil. Alternatively, if natural gas were to continue to be priced at significantly more than diesel oil on an energy equivalent basis, the MSZ could easily reduce its fuel costs by switching the gas/oil burners that were installed back to diesel oil (although doing so would give up many environmental and other benefits of the conversion to gas).

B5. Improvements in Service

Switching to natural gas in municipal buildings will result in more reliable heating service. Lower maintenance requirements for the new gas burners relative to the old oil burners make it much more likely that the boilers will remain in service and operating at near optimal efficiency. Fuel delivery to the 21 facilities now occurs smoothly by gas pipeline, avoiding the need for fuel deliveries by truck, which were previously quite erratic. The fact that gas is distributed by a profit-making private company, and that service is regulated, may also bring about improvements in service and in responsiveness to any problems.

These factors make it more likely that the converted municipal buildings will be better heated throughout the six months of the cold season. Hospital and clinic patients, children in day care, students, municipal employees, and citizens using municipal facilities will all benefit.

At the current relative prices of gas and oil, the gas conversion alone has the effect of increasing the MSZ's heating costs. During the current economic difficulties in Stara Zagora, the MSZ might not be able to afford these higher costs. Fortunately falling energy prices more than compensate for this potential problem. The combination of falling prices and the gas conversion will allow the MSZ this winter to provide more heat, more reliably and more cleanly, than it did last winter—all for a smaller fuel budget than in 1997-1998.

B6. Institutional Benefits

In addition to environmental benefits and improvements in service, the municipal gas conversion project has provided various institutional benefits to Stara Zagora's municipal government. For example, as a result of the project, the municipality gained valuable information on what it means to regulate utilities, especially gas. U.S.-based training in utility regulation for two Stara Zagora officials further developed the municipality's growing regulatory capabilities. This regulatory experience should prove useful as services and entities in the local economy are privatized, creating the need for negotiated agreements and regulatory oversight.

The gasification project has provided the benefit of exposing the municipality to different fuel-switching options and approaches to conversions. City officials have become more attuned to the environmental benefits that can be gained from fuel-switching and from pollution-control projects more generally. From observing and participating in the planning process, the municipality has also gained experience in project evaluation. Lessons and approaches learned from the gasification project should provide a helpful base of experience on which the municipality can draw in future initiatives addressing environmental, energy, or other matters.

Several other municipalities in Bulgaria are currently pursuing gasification projects for their municipal, industrial, and/or residential sectors. Stara Zagora's emerging regulatory framework for local gas distribution may serve as a model for other gasification projects in their early stages. Its experience in bringing about the extension of a gas pipeline to the center city may also provide a helpful example. As a result of the gasification project, Stara Zagora will have the opportunity to share its regulatory expertise with other cities, and perhaps to learn from them about further projects addressing the industrial and residential sectors.

B7. Other Benefits

The gasification project may also yield long-term economic benefits for the municipality due to the increased attractiveness of Stara Zagora as a site for industry. The availability of privately supplied, affordable, environmentally attractive natural gas and the existence of a regulatory framework to ensure reliable supply and service can provide important incentives for industries to establish operations in Stara Zagora. More reliable heating in the winter will improve conditions in industrial and commercial facilities as well as in schools, hospitals, and other public buildings. Air quality will improve. In sum, Stara Zagora will become a better place to live and work.

Another benefit of the municipal gasification project is the positive role it has played in encouraging gasification efforts in the industrial sector, and in drawing attention to the potential for gasification in the residential sector. Before the municipal gasification project began, several industrial conversion projects had taken place in the industrial zone just south of the city. With the extension of the gas pipeline to the center city and the conversion of the 21 municipal facilities, more industrial and commercial facilities have become interested in gasification. Few of the potential conversions have taken place because of lack of available funds. However, this situation will likely change if the price of gas relative to oil shifts more favorably toward gas.

Gasification in the residential sector appears to be possible, but faces some challenges. Most of Stara Zagora's residential apartment buildings had traditionally been heated by oil-fired boilers, with typically one boiler for each 40-50 unit building. During the recent years of economic difficulty, fuel was difficult to obtain and many of the boilers were operated erratically. Most of the boilers deteriorated and many now no longer work at all. Apartment dwellers now commonly rely on electric space heaters to heat their own individual apartments rather than a central boiler that would heat the entire building.

In this context, refurbishing the central boilers and converting them to gas would offer several advantages. First, centrally supplied steam or hot water heat is typically far more energy-efficient than is electric space heating. Generation of the electricity involves large energy losses, and electric space heaters themselves are inefficient in converting electrical energy to effective heat. On a life cycle, full cost basis, a central gas-fired boiler should be far less costly in heating an apartment building than electric space heaters in individual apartments. Second, heat obtained from a reliable gas supply would be preferable to electricity-based heat that is affected by frequent power outages. And finally, gas would likely offer environmental advantages over electricity generated from high sulfur lignite, although the differing location of the emissions (i.e., emissions from the gas boilers would occur from low stacks in an urban area, while the much greater emissions from a lignite-fired power plant would occur from a tall stack in a less populated area) would complicate any analysis.

However, conversion of residential heating in Stara Zagora to gas would require very large investments in revamping boilers and pipes, which in most residential buildings are decrepit and, in some cases, have been stripped apart. If some residential conversions are made, however, the municipal conversion project can share some of the credit in having brought about the extension of the pipeline to the center city and in facilitating the delivery of service to customers.

C. Suggestions Regarding Future Conversions to Gas

It is hoped that the experience in converting the 21 municipal facilities in Stara Zagora to gas can provide some assistance for other communities in Bulgaria contemplating similar conversions, whether in the municipal, residential, industrial, or commercial sectors. To this end, USAID contractors are preparing a report summarizing some of the techniques developed and lessons learned in Stara Zagora. We want to contribute to this effort by providing two suggestions for maximizing the environmental benefits of future natural gas conversions.

First, the volume of air pollutants abated by a conversion to a clean fuel depends greatly on the “dirtiness” of the fuel used prior to the conversion. The municipal conversions in Stara Zagora financed by USAID involved boilers that formerly burned light diesel oil, a moderately clean fuel. Modest emissions reductions will result in switching from this moderately clean fuel to natural gas, a very clean fuel. Much greater reductions would occur in addressing sources that burn dirty fuels such as mazut or, even dirtier, lignite. The following table suggests the degree to which emissions would be reduced by converting a mazut-burning boiler relative to one burning diesel oil.

Table 11. Emission Factors for Combustion of Different Fuels in Boilers ²⁵
(kg of pollutant per million BTU of fuel burned)

Fuel	PM	SOx	NOx	CO
Mazut (residual fuel oil; 3 percent sulfur)	.0969	1.4310	.1650	.0150
Light diesel (distillate fuel oil; 0.5 percent sulfur)	.0106	.2314	.0649	.0161
Natural gas	.0033	.0011	.0429	.0360

²⁵ Source: emission factors are drawn from U.S. EPA, AP-42, op cit. The published emission factors have been further adjusted using EPA’s formulas to reflect the specific sulfur content of these three fuels in Bulgaria.

The table shows that combustion of mazut relative to light diesel oil, on an energy-equivalent basis, produces about nine times as much PM, 6 times as much SO_x and about two and a half times as much NO_x. Further calculations would show that converting a mazut-fired boiler to gas, relative to converting a similar size diesel-fired boiler, would abate 13 times as much PM, six times as much SO_x, and five and a half times as much NO_x. The cost of converting a mazut-burning boiler is likely similar to the cost of converting an equivalent sized diesel-burning boiler. Thus, the benefit-to-cost ratio of a project converting from mazut to gas will likely be much higher than for a project converting from diesel to gas. Even greater benefits could be obtained by converting a source burning lignite.

Similar conclusions apply to greenhouse gas emissions. On an energy equivalent basis, burning diesel oil produces roughly 38 percent more GHGs than does burning natural gas, while burning residual oil produces 49 percent more and burning coal produces 75 to 85 percent more.

A second suggestion to maximize the environmental impact from future gas conversions involves focusing on urban sources with short stacks. Emissions from sources in urban areas will cause much greater health risks than emissions from sources in less populated rural areas. Emissions from urban sources with short stacks will tend to remain localized, producing high ambient concentrations in the densely populated urban area. Emissions from taller stacks will tend to disperse, producing much lower ambient concentrations over a wider area, with much of the impact potentially occurring in less populated rural areas.