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INSTITUTIONAL ASPECTS OF
FUEL-CELL TOTAL-ENERGY SYSTEM:
A SUMMARY SURVEY

Task #22

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Prepared for:

DIVISION OF BUILDINGS AND COMMUNITY SYSTEMS
Office of the Assistant Administrator for Conservation
U.S. Energy Research and Development Administration
20 Massachusetts Avenue, N.W.
Washington, D.C. 20545

Prepared by:

RESOURCE PLANNING ASSOCIATES, INC.
1750 K Street, N.W.
Suite 1250
Washington, D.C. 20006

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INSTITUTIONAL IMPEDIMENTS TO FUEL CELL MARKET
PENETRATION: SUMMARY OF FINDINGS

The institutional impediments to market penetration by fuel cells can be grouped into six related categories:

- Ownership of fuel cell, and related franchise limitations
- Backup arrangements
- Economic effects
- Fuel policy
- Regulatory proceedings
- Competitive response.

OWNERSHIP OF FUEL CELL AND RELATED
FRANCHISE LIMITATIONS

The ownership of the fuel cell will affect the extent and nature of the regulations that apply, particularly regulations concerning franchise restrictions.

Ownership by gas utility. Under this arrangement, gas utilities would generally require a change in their franchises in order to provide electrical service. In deciding whether to grant this right to a gas utility, the PUC should consider at least the following factors:

- Overall costs to the customer
- Energy efficiency of the fuel cell
- Effects on electric utilities
 - will their load pattern be adversely affected, resulting in a less efficient electric supply system?
 - do they have excess capacity?
- Availability of fuel over the life of the fuel cell
- Potential conflicts with state fuel policy
- Public service and convenience.

A change in the franchise would not be required in all states. Some states indicated that if the electric output of the fuel cell were not metered and charges to customers were based only on gas consumption, a franchise or charter change might not be necessary. Electric utilities would challenge such a ruling and the outcome is not certain. Also, the PUC might set special rates for such customers.

If the electricity is metered and customers charged according to their use of electricity, the gas utility is clearly in the business of supplying electricity and thus would face the franchise limitations.

Ownership by electric utility. There would be no franchise or charter limitations. The PUC might set special rates for these customers, however.

Ownership by dual utility. There would be no franchise or charter limitation. The PUC might set special rates for the customers involved.

Ownership by individual customers. There would be no limitations to this practice arising from franchise provisions.

Ownership by cooperatives. In some states, cooperatives are regulated - in others they are not. For the states where cooperatives are regulated, franchise limitations similar to those that would affect gas utility ownership might arise.

* * *

The states indicated that if fuel cells were shown to have significant benefits for the state, then legislative and regulatory policies could change the franchise restrictions. However, the benefits would have to be clear and substantial, not futuristic or uncertain.

BACKUP FACILITIES

In most jurisdictions, reserve or backup facilities to supply electricity would not be mandatory. However, in many cases (if not most), users would probably want backup facilities. Users of the electric service could be expected to exercise discretion on the amount of backup they desired, within constraints dictated by public health and safety regulations.

The most obvious source of backup would be the local electric grid. However, it is not clear that the local electric utilities would be required under law to provide backup power in many jurisdictions. Also, special rates are normally set for such backup service and such rates would significantly affect the economic viability of the fuel cell.

ECONOMIC EFFECTS

In making decisions regarding fuel cells, the PUC is likely to consider the total economic affects of fuel cell development, including:

- The costs to the end user of the fuel cell
- The cost to others, e.g., the potential for adverse affects on the local electric system
- Fuel cost uncertainties
- The potential for interruptions of fuel supply and the effects of such interruptions on the fuel cell user and others who otherwise would have had access to the gas being consumed by the fuel cell.

FUELS POLICY

Most PUC's expressed dismay at a federal policy that might expand the demand for natural gas to generate electricity, especially in view of the push for coal conversion. The general opinion is that fuel cell is inconsistent with national and state fuels policy. This could be an important point in the effort to secure franchise rights or set special rates for fuel cells.

Furthermore, the states indicated that an improvement in the efficiency of the use of gas would not be sufficient to change that opinion. They would ask whether fuel cells would reduce the overall volume of natural gas consumed in the state. A negative answer would impede the adoption of regulatory policies favoring fuel cell development.

The states generally indicated that the fuel cell would receive a curtailment priority according to the type of end user. Only one state indicated that it would consider curtailment priorities according to volume of use.

Some states already restrict new natural gas hookups. One state indicated that fuel cells would be at the bottom of the list for new hookups. The policies that are ultimately developed regarding new hookups, and the treatment of fuel cells for new hookups, could significantly affect the extent and rate of market penetration.

REGULATORY PROCEEDINGS

All of the issues mentioned above would generally require lengthy regulatory proceedings. Many, if not most, of these proceedings would be contested. In as much as typical rate cases can take a year or more, it is not likely that fuel cell issues would be resolved expeditiously. Also, it is not clear whether uniform policies or rates could be developed. For example, the factors involved in setting rates for fuel cell users would probably be unique to each application (i.e., installation costs, overall efficiency, impact on local electric system).

COMPETITIVE RESPONSE

All the states indicated that electric utilities would respond aggressively to development of the fuel cell by other parties. They would use both the regulatory bodies and the courts as forums to challenge fuel cell development by gas utilities. Such proceedings would substantially impede market penetration.

The utilities apparently have a strong policy basis for blocking development of fuel cells since the fuel cell requires natural gas. Furthermore, the utilities hold many of the cards, for example, they have the best backup system and generally wide discretion in rates for backup service. Electric utilities can argue that fuel cell adversely affects their system and thus would raise the cost of electricity to other users. Finally, they hold the electric service franchise rights.

FEDERAL REGULATION

FPC would only become involved if these were interstate transactions and if someone petitioned for a ruling. This has not happened, and the FPC has neither made any rulings nor considered any policies.

FEA has not thought about fuel cells in relation to its programs, and had no comments.

There is a market potential in spite of many restrictions. While the market would most likely not be the individual utility companies, one does exist for:

- Combination or dual utilities (California, New York, Kansas, Illinois, and Colorado have many dual companies)
- Individuals
- And for the most part, cooperatives.

* * *

The methodology and related data used to arrive at the above observations are contained in Attachment 1. Summary notes are contained in Attachment 2.

ATTACHMENT 1

Fuel Cell Methodology

The methodology employed to assess the market penetration potential of a 40 kW modular fuel cell integrated energy system was:

1. To determine the states that consumed 50 percent of the natural gas used for electric generation in the U.S. (see Exhibits 1a, 1b, 1c)
2. To call the Public Utility Commissions in those states and discuss with their legal counselors the legality and the potential market for the fuel cell within the state; and
3. To call those federal agencies (FEA and FPC) whose policies might affect use of fuel cells.

It was determined that California, Colorado, Florida, Georgia, Illinois, Kansas, Michigan, Missouri, New Jersey, New Mexico, New York, Oklahoma, and North Carolina use 50 percent of the natural gas used for generation of electricity in the U.S.

We then called the states' Public Utility Commissions and asked to speak to their legal counselor. We introduced ourselves, explained our purpose, and asked the questions shown in Exhibit 1d.

Once we got an idea of the states' reactions, we called the FPC and the FEA and asked the questions shown in Exhibit 1e.

STATE REGULATION QUESTIONS

FRANCHISE. Would the charter or franchise of the gas utility allow the utility to provide electricity, via the fuel cell, as a service to its customers?

Were the gas utility to provide such a service, would there be a franchise conflict with the electric utility serving the same area?

Would a fuel cell total energy system have to tie in with the electrical grid? If so, does this present franchise problems?

OWNERSHIP. The ownership arrangement for the fuel cell system could have franchise and regulatory jurisdiction implications. For the following ownership arrangements,

- is there a franchise conflict or gas utility charter limitation?
- would the public utility commission have regulatory jurisdiction over the system?
- would it become part of the gas company's rate base?

<u>Ownership Arrangement</u>	<u>Franchise or Charter Problem</u>		<u>PUC Has Regulatory Jurisdiction</u>	
	<u>Yes</u>	<u>No</u>	<u>Yes</u>	<u>No</u>
1. Gas utility owns outright				
2. Gas utility owns and leases to customer				
3. Third party owns and leases to customer				
4. Customer owns outright				
- individually				
- through cooperatives or similar organizations				

What other factors are likely to affect state public utility commission regulatory jurisdiction of fuel cell systems?

- size of system
- degree of market saturation
- impact on electric utilities
- reliability of electrical supply: whose standards? what reserve capacity needed? Relationship to local grid?

FUELS POLICY. The fuel cell requires natural gas or other scarce high carbon fuels. In this regard,

- does the state have explicit policy or regulations that prohibit or discourage use of these fuels to generate electricity and steam via fuel cells?
- under the state's gas curtailment plan, would the fuel cell, as a user of gas, be classified according to the beneficiary of the fuel cell (e.g., residential apartments) or as an electric power plant?

PUBLICLY-OWNED SYSTEMS. How would the answers differ above for publicly-owned systems?

OTHER REGULATION. Do other state bodies potentially have important regulatory jurisdiction over fuel cells?

FEDERAL REGULATION QUESTIONS

FPC. Would the FPC have any regulatory jurisdiction? For example, can the FPC rule that utility ownership of fuel cells and sales of electricity constitute gas-sales-for-resale, and thus regulate the rates?

How would the FPC classify fuel cells for purposes of curtailment -- as a power plant or according to the status of the user of the fuel cell output?

FEA. The FEA currently prohibits the construction of baseload power plants fueled by natural gas or oil. Why should FEA not treat fuel cells in the same way? Would FEA approval be necessary, or do fuel cells not fall within the purview of FEA's power in this area?

ATTACHMENT 2

FUEL CELL ANALYSIS: NOTES ON STATE PUC REACTION

NATURAL GAS SHORTAGE

The general reaction to fuel cells by the lawyers in the state PUCs was, at best, "hesitant." While not wanting to say anything definitive, all expressed concern over the fuel cell's use of natural gas. Even though few states had a written fuels policy, the lawyers felt that the use of natural gas would provide grounds for certificate refusal in their states. Many expressed surprise that a federal agency would even think of promoting a device that relies on natural gas, especially after such a strong federal campaign for coal conversion.

Many of the states have coal conversion plans (see Exhibit 2a) and many have already begun conversion. Even those states with an abundant supply of natural gas (and these states expressed little concern over a fuels policy) said that they were thinking in terms of coal for the future and that the electric companies were making plans for coal conversion.

The general feeling was that if fuel cells could be shown to result in a reduction in overall consumption of natural gas, then PUCs, would probably approve their use. The main concern was over volume of natural gas, not the efficiency of its use.

FRANCHISE

Disregarding the natural gas shortage, the consensus among the PUC legal counsels was that the gas companies would have to apply for new certificates in order to sell electricity as well as to provide electricity.

Each state, though, has its own franchise policies. Because of the differences among state PUC regulations, it is hard to make generalizations. To assess the potential for a fuel cell market properly would require calling each state PUC.

For instance, among the states telephoned:

- Florida and Oklahoma do not have the authority to grant franchises
 - in Florida, the informal network utilities is so tight that it would be unlikely that one would upset the balance and become competitive
 - in Oklahoma, the largest utility, Oklahoma Gas and Electric has its own gas supply, thus has an independence that most utilities do not have.

- Kansas, Illinois, and Colorado have formal territorial regulations whereby one territory is served by one gas company and one electric company.
- North Carolina and Florida have informal territory regulations. Competition would not be approved by the PUCs.
- New York has a regulation forbidding the attachment of new customers by gas companies. North Carolina will soon have a similar regulation.

RELIABILITY

Colorado, Georgia, North Carolina, and New York have written reliability regulations. While most states do not have these formal reliability requirements, the PUCs feel that they have the right of enforcing reliability by liberal interpretation of what "adequate" service entails.

PRIORITY CLASSIFICATION

All states except Kansas based their gas priority on end use rather than volume used.

RESOURCE PLANNING ASSOCIATES, INC.

44 BRATTLE STREET • CAMBRIDGE, MASSACHUSETTS 02138 • TELEPHONE: (617) 661-1410
PARIS • WASHINGTON, D.C.