

1

STATE OF MICHIGAN

2

BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

3

In the matter of the Commission's

CASE NO. U-14561

4

Own Motion, to investigate the

5

appropriateness of instituting a
surcharge to assist in the funding

Volume 3

6

of the Gas Technology Institute.

7

CROSS-EXAMINATION

8

Proceedings held in the above-entitled matter

9

before Mark E. Cummins, J.D., Administrative Law

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Judge with SOAHR, at the Michigan Public Service

11

Commission, 6545 Mercantile Way, Room D, Lansing,

12

Michigan, on Thursday, June 1, 2006, at 9:00 a.m.

13

APPEARANCES:

14

RICHARD P. MIDDLETON, J.D.

15

Michigan Consolidated Gas Company

16

2000 Second Avenue, 688 WCB

17

Detroit, Michigan 48226

18

Appearing on behalf of Michigan Consolidated
Gas Company

19

RHONDA MORRIS, J.D.

20

Consumers Energy Company

21

One Energy Plaza, Room 11-225

22

Jackson, Michigan 49201

23

Appearing on behalf of Consumers Energy Company

24

(Appearances, continuing)

25

1 APPEARANCES (Continued):

2 MILLER, CANFIELD, PADDOCK and STONE, P.L.C.
3 By: SHERRI A. WELLMAN, J.D.
4 One Michigan Avenue, Suite 900
5 Lansing, Michigan 48933

6
7 Appearing on behalf of SEMCO Energy Gas Company,
8 Northern States Power Company d/b/a Xcel Energy,
9 and Wisconsin Public Service Corporation

10 ROBERT B. NELSON, J.D.
11 1423 Fair Oaks Court
12 East Lansing, Michigan 48823

13
14 Appearing on behalf of the Gas Technology Institute

15 CLARK, HILL, P.L.C.
16 By: Robert A. W. Strong, J.D.
17 255 South Old Woodward Avenue, 3rd Floor
18 Birmingham, Michigan 48009

19
20 Appearing on behalf of the Association of Businesses
21 Businesses Advocating Tariff Equity

22
23 MICHAEL E. MOODY, J.D. and
24 JOHN R. LISKEY, J.D.
25 Assistant Attorneys General
Special Litigation Division
525 West Ottawa Street, 6th Floor
P.O. Box 30212
Lansing, Michigan 48913

26
27 Appearing on behalf of Attorney General Michael A. Cox

28
29 PATRICIA S. BARONE, J.D.
30 Assistant Attorney General
6545 Mercantile Way, Suite 15
Lansing, Michigan 48911

31
32 Appearing on behalf of the Michigan Public Service
33 Commission Staff

34 - - -

35
36 REPORTED BY: Lori Anne Penn (CSR-1315)

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1 Lansing, Michigan
2 Thursday, June 1, 2006
3 At about 9:05 A.M.

4 - - -

5 (Hearing resumed pursuant to adjournment of November
6 21, 2005.)

7 JUDGE CUMMINS: Let's go ahead and go on
8 the record. This is the continued proceeding, actually,
9 in Case No. U-14561 concerning an investigation into the
10 appropriateness of funding the Gas Technology Institute.

11 I'm Mark Cummins, the administration law
12 judge assigned to this matter.

13 Could I have the appearances of counsel,
14 please.

15 MR. NELSON: Robert B. Nelson on behalf
16 of the Gas Technology Institute.

17 MR. STRONG: Robert A. W. Strong
18 appearing on behalf of the Association of Businesses
19 Advocating Tariff Equity.

20 MR. MOODY: Michael Moody on behalf of
21 Attorney General Mike Cox.

22 MS. BARONE: Patricia S. Barone,
23 assistant attorney general, appearing on behalf of the
24 Michigan Public Service Commission Staff.

25 MS. WELLMAN: Sherry A. Wellman on behalf
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1 of Northern States Power Company, SEMCO Energy Gas
2 Company, Wisconsin Public Service Corporation and
3 Michigan Gas Utilities Corporation.

4 MR. MIDDLETON: Morning, your Honor.
5 Richard P. Middleton appearing on behalf of Michigan
6 Consolidated Gas Company.

7 MS. MORRIS: Rhonda Morris on behalf of
8 Consumers Energy Company.

9 MR. LISKEY: John Liskey on behalf of the
10 Attorney General Mike Cox.

11 JUDGE CUMMINS: Very well. I believe
12 that's -- that's Mr. King. O.K. That covers everyone.

13 Pursuant to the amended schedule
14 established for this case, this is the time and place set
15 for cross-examination of all witnesses. We have prefiled
16 testimony from four witnesses. The first of which we are
17 going to take up today will be Gas Technology Institute's
18 witness.

19 Mr. Nelson, have you already premarked
20 your exhibit today?

21 MR. NELSON: Yes.

22 JUDGE CUMMINS: O.K. Very well. You
23 have the floor.

24 MR. NELSON: Yes. Thank you, your Honor.
25 At this time we would call Ronald Edelstein to the stand.

1 (Document marked for identification by the Court
2 Reporter as Exhibit No. GTI-1.)

3 R O N A L D B. E D E L S T E I N
4 was called as a witness on behalf of The Gas Technology
5 Institute and, having been duly sworn to testify the
6 truth, was examined and testified as follows:

7 DIRECT EXAMINATION

8 BY MR. NELSON:

9 Q Good morning.

10 A Good morning.

11 Q Could you please state your name for the record.

12 A Ronald B. Edelstein.

13 Q And by whom are you employed?

14 A Gas Technology Institute.

15 Q And did you cause to be prepared in this matter a
16 document entitled the Qualifications and Direct Testimony
17 of Ronald Edelstein on behalf of The Gas Technology
18 Institute consisting of a cover page and 30 numbered
19 pages?

20 A I did.

21 Q And did you also cause to be filed in this matter a
22 document entitled Rebuttal Testimony of Ronald B.
23 Edelstein on behalf of Gas Technology Institute?

24 A I did.

25 Q And that consists of a cover page and six pages, correct?

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- 1 A Yes.
- 2 Q Do you have those documents in front of you?
- 3 A I do.
- 4 Q And do you have any revisions or corrections to those
- 5 documents?
- 6 A Yes, I do. On the rebuttal testimony, page 2, line 12,
- 7 the number sign should be a paragraph sign.
- 8 Q And do you have corrections on the direct testimony?
- 9 A Yes, I do. On page 29, line 18, the 1.74 cent/Mcf should
- 10 be 1.74 cents with an "s" per Mcf; and on page 26, line
- 11 14, there are now 21 states instead of 20 that have
- 12 currently authorized research funding for GTI-related
- 13 R&D. The addition is Arizona and Southwest Gas.
- 14 Q O.K. And do you have before you what's been marked by
- 15 the court reporter as proposed Exhibit GTI-1 (RBE-1)?
- 16 A I do. Is that the benefits paper?
- 17 Q Yes.
- 18 A Yes.
- 19 Q And was that document reviewed by you before it was
- 20 published?
- 21 A Yes, it was.
- 22 Q And the author of that document, Mr. Bournakis, prior to
- 23 this document being prepared, was he under your
- 24 supervision?
- 25 A Yes. Dr. Bournakis was under my supervision for about
- Metro Court Reporters, Inc. 248.426.9530

1 ten years.

2 MR. NELSON: O.K. At this time, your
3 Honor, I would offer the testimony, rebuttal testimony
4 and the exhibit.

5 JUDGE CUMMINS: Any objection to binding
6 in the testimony of the witness? Hearing none,
7 Mr. Edelstein's testimony is bound into the record.

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STATE OF MICHIGAN
BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

In the matter, on the Commission's own motion)
to investigate the appropriateness of instituting)
a surcharge to assist in the funding of the)
GAS TECHNOLOGY INSTITUTE)

MPSC Case No. U-14561

QUALIFICATIONS AND DIRECT TESTIMONY

OF

RONALD B. EDELSTEIN

ON BEHALF OF

THE GAS TECHNOLOGY INSTITUTE

January 31, 2006

**DIRECT TESTIMONY OF
RONALD EDELSTEIN**

1 **Q. Please state your name and business address.**

2 A. My name is Ronald Edelstein. My business address is 1700 South Mount
3 Prospect Road, Chicago, IL 60618.

4 **Q. By whom and in what capacity are you employed?**

5 A. I am employed by the Gas Technology Institute (GTI) as Director, State Regulatory
6 Programs.

7 **Q. Please describe your educational background and professional experience.**

8 A. I graduated from the University of Florida with a BS in Aerospace Engineering
9 (1969), Rensselaer Polytechnic Institute (RPI) with an MS in Engineering Science:
10 Solid Mechanics (1972), and another MS from RPI in Engineering Science:
11 Environmental Science & Technology (1977). I began my employment with Pratt &
12 Whitney, working as a structural engineer on gas turbines for 8 years, then
13 Planning Research Company as an engineering consultant to DOE for three years,
14 then the Solar Energy Research Institute as an R&D planner for three years. I
15 joined the Gas Research Institute (GRI) (now Gas Technology Institute) in 1983 as
16 an R&D planner. I have also held positions as Director of Planning and Director of
17 Sales. My current position is Director of State Regulatory Programs.

18 **Q. Have you previously filed testimony before any regulatory commission?**

19 A. Yes. I have filed testimony on behalf of GTI in the states of Kansas,
20 Massachusetts, Oklahoma, Georgia, Virginia, Michigan and Tennessee. I have
21 testified before the Massachusetts Department of Telecommunications and Energy
22 on behalf of KeySpan Energy.

1 **Q. What is the purpose of your testimony?**

2 A. The purpose of my testimony is to summarize the history of GTI and its
3 predecessor, GRI, to describe the benefits that consumers receive from GTI and
4 its gas consumer benefits research and development (R&D) program, to propose
5 criteria that the Commission can establish to be used by gas utilities in Michigan
6 seeking to recover R&D expenses and to identify various mechanisms for
7 recovering R&D expenses.

8 **Q. What is "gas consumer benefits R&D"?**

9 A. This is a specific type of R&D, in which the applicable technologies result in
10 benefits that primarily accrue to gas consumers.

11 **Q. What is the GTI?**

12 A. Natural gas local distribution companies (LDCs) and pipeline companies, in
13 agreement with the Federal Energy Regulatory Commission (FERC), formed GRI
14 in 1977 in the midst of natural gas curtailments and a predicted gas supply
15 shortage. That organization, now known as GTI, directed 75% of its initial
16 research efforts toward increasing supply and lowering the cost of acquiring natural
17 gas. This emphasis decreased in the 1980s to about one-third of our budget as a
18 "bubble" developed in natural gas supply.

19 **Q. What were the results of this effort?**

20 A. First portrayed as a "gas bubble", the supply shortage turned into a surplus,
21 eventually resulting in substantial savings to gas consumers. Production of
22 coalbed methane, called "moonbeam gas" by its detractors, jumped from under 50
23 billion cubic feet (Bcf) /year in the 1980s to over 1,400 Bcf /year in 2002. During

1 the same period, production of tight sands gas went from only 300 Bcf /year to
2 over 2,000 Bcf /year. R&D performed by GTI (amongst other initiatives like an
3 investment tax credit) reduced the technical risks inherent in finding and recovering
4 these unconventional gas resources and aided in bringing them into mainstream
5 production.

6 In the area of conventional supply, GTI developed an imaging technology to
7 produce high-resolution seismic "pictures" of subsurface features. This enables
8 producers to find natural gas that had been overlooked between existing wells.

9 **Q. What is GTI's emphasis on end-use R&D?**

10 A. Initially, end-use R&D was about 20% of GTI's budget; then shifted to about half of
11 our budget in the 1980's and 1990's, and is now about 25% of our budget. The
12 original focus on increased-efficiency equipment like residential space heating and
13 industrial process heating has shifted toward reduced emissions, enhanced safety,
14 and the development of technologies such as fuel cells and combined
15 heating/cooling/power systems which result in substantial overall efficiency
16 increases through the combination of heat and power.

17 **Q. What results has GTI had with its research into residential space heating?**

18 A. Prior to GTI, typical home furnace efficiency was in the range of 60% to 70%. With
19 the introduction of the 96%+ efficiency fully condensing pulse combustion furnace,
20 GTI raised the bar and encouraged manufacturers to develop options for the fully
21 condensing furnace. Today, condensing furnaces with over 90% efficiency
22 account for about 25% of residential furnace sales; the pulse combustion furnace
23 and its derivatives are still among the most efficient furnaces on the market.

1 **Q. Are there any projects explicitly designed for the low-income gas customer?**

2 A. Yes, GTI is working on two projects that could directly benefit the low-income gas
3 customer. First, we have under development a combination water heater/ space
4 heater system for residential homes that uses a low-cost, fully condensing, high-
5 efficiency (greater than 93%) water heater to provide both water heating and space
6 heating needs for the home. It would eliminate the need for a space heater in
7 smaller homes and apartments. This project has only been tested in the
8 laboratory, and needs additional field testing in a real-world environment to validate
9 proof of feasibility. Second, we are working on a heating-only absorption gas heat
10 pump that has a heating efficiency of 120-140%. If the capital cost of the unit
11 could be significantly reduced through R&D, this unit could provide substantial
12 energy savings to the low-income gas customer.

13 **Q. What about commercial applications of GTI's R&D?**

14 A. GTI funding has produced a new generation of natural gas engine-driven,
15 absorption, and desiccant-based cooling systems. First-generation single-effect
16 absorption cooling systems had coefficients of performance (COPs) of 0.6; the
17 efficiencies of these new systems (developed as a result of GTI and other R&D)
18 are verified for COPs ranging from 0.8 to 1.2, producing gas savings as well as
19 lowering peak electric loads.

20 **Q. What about industrial applications of GTI's R&D?**

21 A. GTI-funded advancements in industrial combustion equipment helped increase the
22 efficiency and lower the emissions from process heating and boiler steam
23 production markets. For instance, in 2001, GTI demonstrated oscillating

1 combustion on a forging furnace with a 49% decrease in NOx emissions and a 3%
2 decrease in fuel usage, while keeping the average CO emissions below 100 ppm;
3 this technology has applications to a wide range of high-temperature industrial
4 furnaces.

5 **Q. Would the private sector have invested in this R&D without the existence of**
6 **GTI?**

7 A. Not likely. Current laws and regulations in general require far lower efficiencies
8 and higher NOx emissions. Manufacturers generally have no incentive – cost or
9 otherwise – to produce such efficient or environmentally friendly equipment above
10 and beyond regulatory requirements. Unfortunately, energy efficiency in and of
11 itself does not sell well in the U.S. market, and so is not invested in by
12 manufacturers.

13 **Q. How does GTI contribute to safety?**

14 A. Typically, as new equipment is developed, systemic gaps can cause problems in
15 the areas of safety and reliability. For example, gas furnace corrosion is
16 dependent on vent system design and installation but, typically, the meter and
17 upstream service is handled by the LDC, the furnace by the manufacturer, and the
18 vent system by the installers. As manufacturers began to offer partially
19 condensing furnace designs with 80% to 90% efficiencies, the heat exchanger and
20 vent system began to experience corrosion problems which did not exist in the
21 lower-efficiency furnaces sold before 1981. GRI designed improved heat
22 exchangers and by developed vent installation instructions that minimized the
23 amount of condensation. GRI also developed furnace installation instructions that

are included in every residential furnace sold in the U.S. and its vent design procedures have been incorporated into the National Fuel Gas Code.

Q. Do you have other examples of safety-related R&D?

A. Yes. Other safety-related research resulted in the elimination of "false positives" from CO monitors and developed scientific data for acceptable NOx levels for indoor air quality. In 1998, GTI introduced a test methodology to evaluate new water heater designs that could reduce or prevent flammable vapor incidents when flammable liquids are improperly stored adjacent to the heater.

Q. Would the private sector have invested in this R&D without the existence of GTI?

A. That is unlikely. The problems fell "between sectors"; that is, an ultimate problem resulted from perfectly acceptable and safe technologies not being able to co-exist in the same environment. GTI was uniquely placed to bridge that gap and provide successful solutions.

Q. What specific types of research projects is GTI expecting to research on behalf of Michigan's gas utility customers?

A. There are at least eleven research projects GTI is planning that support Michigan's retail utility customers and local distribution companies. The objectives of the operations projects are to increase safety and reduce operating costs. The objectives of the end-use projects are to increase energy efficiency and so lower retail customers' gas bills. These include:

(1) **Miniature Methane/Ethane Detector for Leak Surveys:** Previous gas-industry-sponsored work has resulted in the development of optical

1 methods of finding gas leaks by detecting methane and, more recently,
2 ethane. The presence of ethane in gas leak positively confirms that the
3 leak is related to natural gas, and not "swamp gas" or other sources of
4 methane. This confirmation eliminates the cost of gas sampling and
5 analysis, minimizes multi-party discussions and time for the gas industry,
6 thus reducing the cost of operations. However, detection of very low
7 levels of ethane in natural gas leaks is very challenging. Initial
8 experiments conducted with the previously developed Proof-of-Concept
9 (POC) system for ethane have demonstrated the viability of detection of
10 ethane content in natural gas plumes under realistic leak conditions. The
11 proof-of-concept tests were successful in detection of ethane presence in
12 low concentration (30 ppm methane) natural gas plumes. The best
13 sensitivity of these tests showed the detection capability of ethane to 200
14 ppb. These Concept Evaluation Unit tests used an optical modulator for
15 ethane detection which was too large to be integrated into a Portable
16 Methane Detector (PMD) being developed under a separate project.

17 It was decided that the first step towards a practical ethane instrument
18 would be to develop a miniaturized ethane modulator, the main
19 component of the PMD. This miniaturized Ethane/Methane Detector
20 (EMD) project is now coming to a successful conclusion. Although the
21 work is not yet fully complete, an ethane capable modulator
22 (approximately one cubic inch in size) has been developed. Thermal
23 testing under controlled, laboratory conditions showed that ethane

1 detection would be much more difficult (approximately three times more
2 demanding than methane only detection). Preliminary tests have shown
3 that the miniature EMD modulator is capable of operating at or near the
4 same sensitivity level as the much larger unit used in the concept
5 evaluation tests.

6 The next logical step in the EMD development is to miniaturize other
7 components of ethane detection and integrate the ethane system into the
8 PMD unit. The specific tasks for the proposed project are: (1) Receiver
9 Design and Prototyping, (2) Methane Filtering, (3) Software Development,
10 (4) Display Options and Integration with PMD and Testing, and (5)
11 Prepare Final Report.

12 **(2) Magnetically Detectable Polyethylene (PE) Pipe:** While
13 magnetically detectable PE pipe has been in development for over fifteen
14 years, additional work needs to be performed for successful completion of
15 the program. GTI is offering three new initiatives regarding the
16 development of "Mag Pipe" including the developing 8200 Series Mag
17 Pipe, lowering the costs of Mag Pipe through additional research into
18 enhancing its performance characteristics and developing a universal
19 locator with Mag Pipe technology. These three projects will assist in the
20 successful implementation of Mag Pipe into local distribution systems.

21 The focus of the proposed research is to mitigate third-party pipeline
22 damage at the earliest stages through the development and
23 commercialization of innovative locatable magnetic plastic pipe and a

1 Universal Locator to locate various underground gas distribution pipelines.
2 Today, more than 90 percent of gas distribution pipe being installed is PE
3 pipe using a copper tracer wire or an electronic marker for locating the
4 underground pipe. However, these methods are susceptible to breakage
5 or corrosion, rendering the buried plastic material undetectable. Due to its
6 locatability, Mag Pipe substantially reduces its risk of third party damage
7 and provides LDC's a solution to this problem.

8 The objectives for this project are: (1) Development and approval of 8200
9 Series Mag Pipe (includes a pilot program for implementation into a
10 utility's distribution system). 8200 Series mag pipe is Performance Pipe's
11 8100 Series PE compounded with strontium ferrite particles, (2)
12 Performance enhancements of Mag Pipe to lower the costs associated
13 with the technology. GTI will perform research to improve the
14 performance characteristics of Mag Pipe and lower the costs of the
15 product. Reducing the costs associated with Mag Pipe technology is
16 needed to ensure that distribution companies will immediately and broadly
17 purchase, adapt and implement Mag Pipe technology in their distribution
18 systems, and (3) Universal locating tool that can locate all types of buried
19 gas facilities. GTI will work with current locating tool manufacturers on the
20 implementation of the technology required to locate Mag Pipe into one,
21 universal tool.

22 Program Status/Related Efforts: Mag Pipe has already been a proven
23 technology with the development of both medium-density (2406) and high-

1 density (3408) PE gas-grade resins. This program will provide additional
2 development and better performance testing of Mag Pipe while lowering
3 the associated costs of using it. This OTD project will allow the industry to
4 take full advantage of the attributes associated with magnetically
5 detectable polyethylene pipe.

6 **(3) Hand-Held Acoustic System for Plastic Pipe Location:** Past GTI-
7 sponsored research has successfully demonstrated that active pulsed-
8 echo sonic technology can detect and locate small-diameter pipes,
9 including PE pipes, to the depth of 5 feet in a laboratory environment. In
10 addition, attenuation measurement data sets collected by a third party
11 from soils around the United States were applied to the current system to
12 perform mathematical analysis on the applicability of the system. This
13 analysis showed that a laboratory-grade acoustic system has a potential
14 for detecting 1.5 and 4-inch diameter pipes at a depth of 3 ft for 50% and
15 100% of soils in the United States, respectively.

16 In this project, the laboratory-grade pulse-echo pipe location system will
17 be designed into a hand-held system for application to buried pipe
18 detection. The system will include data acquisition and processing boards
19 powered by a battery, transducer and receiver arrays in a cane-like setup,
20 and data display system. The system will be tested with participating
21 utilities for detecting buried pipes, 1 to 6 inches in diameter at depths from
22 6 inches to 10 feet. The data collected at each location will require less

1 than two minutes and the analyzed data will be displayed to the system
2 operator.

3 The following tasks are included in the project: (1) Planning Meetings. GTI
4 and its subcontractor will meet with industry representatives and present
5 the initial work plan for the proposed effort. This plan will define pipe sizes
6 to be detected, soil conditions, and system approach and cost. The plan
7 will also determine the field evaluation site(s) and test time frame. (2)
8 Design Electrical and Electronic System. Under this task, electrical and
9 electronic components will be designed, tested and built. The power
10 requirement for the system will be defined and appropriate battery needs
11 will be procured. (3) Develop System Software. The objectives of this task
12 are to develop the data acquisition system, signal processing, and user
13 interface. The past knowledge of interactions of various acoustic waves
14 and methods to avoid interactions of these acoustic waves will be used to
15 improve data analysis packages. (4) Design Transmit-Receive Set. As
16 indicated before, the project calls for a miniaturization of the current
17 hardware for the hand-held pipe detection system application. In this task,
18 two pairs of sensors, each consisting of two receivers and a transmitter,
19 will be designed and build. These pairs of sensors will be integrated into a
20 cane-like structure for hand-held application. (5) Integrate System. The
21 electrical and electronic system, transmit-receive set, and software for
22 data analysis will be integrated. Two sets of a identical systems will be
23 manufactured. The system weight, size, and cost will be determined, (6)

1 System Evaluations. The complete system will be evaluated for its ability
2 to detect buried pipes. This task will confirm the system's capabilities and
3 field evaluation needs. Based on these initial evaluations, the system will
4 be improved, if required. The final system will be tested in the field at two
5 locations with the participating utilities, and (7) Final Report.

6 **(4) Remote Laser Leak Surveys:** Current leak surveys of natural gas
7 distribution systems involve use of "flame packs" and the mobile Optical
8 Methane Detector (OMD). Both of these leak location technologies
9 require that the detector be brought in contact with the gas leakage plume,
10 a very labor-intensive effort. The Laser Line-scan Camera (LLC)
11 technology being developed under the on-going GTI-manager, utility-
12 sponsored project with Laser Imaging Systems, Inc. (LIS) and AVISYS,
13 Inc. allows "stand-off" inspection of both mains and service lines out to
14 distances of 30 meters from a moving vehicle. The initial results of the on-
15 going project are very encouraging. However, the detection limit,
16 inspection speed, operator interface and packaging of the system will
17 require further evaluations/improvements to make the LLC an attractive
18 alternative to the current leak survey practices.

19 The primary objective of the proposed project is to evaluate/improve the
20 detection limit and inspection speed of the LLC, and to make the system
21 more user-friendly. This will be accomplished by conducting additional
22 testing in laboratory, in field, and upgrading various components of the
23 current LLC design.

1 In the current, on-going project, a prototype LLC was designed and built.
2 This system used two semi-conductor lasers, one at a wavelength strongly
3 absorbed by methane and the other at a wavelength for which the gas is
4 essentially transparent. These two lasers are scanned across the field-of-
5 view of a 32-element detector array that is projected from a turret atop a
6 van.

7 The line scan field-of-view of the detector array is displayed on a
8 conventional video image of the area being inspected. The operator
9 controls the direction of the LLC field-of-view. When the line scan passes
10 over an area on the surface where there is methane gas, an upward
11 deflection of the line occurs. The higher the gas concentration, the higher
12 is the line-scan deflection. By orienting the viewing direction of the LLC to
13 maximize the line scan deflection, the operator is able to pinpoint the
14 location of the leakage plume.

15 The specific technical issues to be resolved in the proposed project are:
16 (1) Evaluation of detection limit and improvements: Studies involving the
17 effect of laser pulse width and signal processing sample rates on the leak
18 detection limit will be conducted. Improvements to the detection limit will
19 be implemented, (2) Range limitations: Various designs of the collection
20 optics will be investigated to increase the detection range of the LLC
21 system, (3) Establish maximum survey speed: Trade-offs between line-
22 scan frequency and detection sensitivity will be performed to determine
23 the maximum survey speed for the LLC, (4) Packaging/operator interface

1 improvements: Special attention will be directed towards reducing the
2 size and power requirements of the LLC system. The system package will
3 be hardened for routine field application, and the operator interface will be
4 simplified.

5 **(5) Integration of Electromagnetic and Acoustic Obstacle Detection**

6 **Systems for Utility Construction Operations:** This project focuses on
7 integrating the drill-head mounted electromagnetic (EM) obstacle
8 detection sensors under development at Maurer Technology, Inc. (MTI)
9 with the surface deployed acoustic sensors being developed by Folsom
10 Research, Inc. (FRI). The objective of these projects is to provide real-
11 time detection of underground utilities during horizontal directional drilling
12 (HDD) operations during installation of pipes. The current technology
13 development research is funded by GTI with cofunding from several
14 utilities. Together, these technologies have the potential to prevent
15 striking and damaging buried utilities during creation of the pilot hole or
16 during back reaming operations. The warning and detection circuitry
17 would be electronically tied to the drill string rotation and forward advance
18 controls so the drill string can be automatically stopped before a strike can
19 occur. By combining these two technologies into a single, integrated
20 display it would be possible to successfully detect buried, energized
21 cables, as well as steel, plastic, clay and concrete pipes.

22 The specific objectives of this project will be to: (1) Improve the noise
23 generation capability for acoustic technology, (2) Design a wireless radio

link between the matrix of acoustic sensors and their processor to simplify field operation, (3) Reduce the size of the EM electronics and sensors mounted in the jet head for use in smaller utility directional drilling rigs (4) Integrate the data acquisition, processing and display of the acoustic and EM sensors, (5) Work with leading drill rig manufacturers to incorporate automatic stoppage of drill string rotation and advance when obstacles are detected within a few feet of the boring head, and (6) Conduct field trials of the integrated obstacle detection system in support of commercialization.

(6) Product Development of an Obstacle Detection System Using

Ground Penetrating Radar (GPR): Currently there are no commercial instruments available to sense the presence of obstacles in the vicinity of a horizontal directional drilling (HDD) bore used for installation of pipes. In the on-going project with Vermeer Manufacturing Company under the sponsorship of GTI, a new advanced GPR system, mounted on the drill head of an HDD that is capable of detecting obstacles in the proximity of the bore is being developed. It is expected that this initial on-going project will provide a pre-production system suitable for only one size HDD machine. This new GPR offers a step forward in the detection of obstacles in the HDD operations. However, this system will require further enhancements to be suitable as a commercially acceptable product from its current pre-production status.

The objective of the proposed work is to produce a fully commercial version of the drill head mounted GPR applying the results of the past

1 developments. The program plan will address the tasks of (1) additional
2 field testing to determine optimal hardware configuration, (2) further
3 ruggedize the downhole components, (3) investigate optimal means of
4 data transmission from the antenna to the surface, (4) continue software
5 and data presentation development, and (5) address issues of integrating
6 the GPR with HDD controls.

7 **(7) Inspection Platforms for Unpiggable Lines:** In response to a
8 number of significant pipeline incidents in recent years, the federal
9 government has imposed new requirements on gas transmission pipeline
10 operators to assess the condition of their facilities. One of the methods
11 used to examine a trans-mission pipeline is in-line inspection (ILI), also
12 known as "smart pigging." Many transmission pipelines are designed to
13 accommodate pigs. Similar requirements are expected within the next few
14 years for LDC-owned transmission pipelines. Unfortunately, the majority of
15 LDC-owned transmission or higher pressure lines contain short-radius
16 bends, plug valves and other obstacles that render them unpiggable with
17 traditional pigging devices.

18 The following system requirements were identified:

- 19 • 12" to 24" diameter; up to 0/5" wall thickness
20 • Five mile run length
21 • Self-powered
22 • Operate in gas flow velocities of 25 feet per second to 150 feet
23 per second

- 1 • Able to negotiate plug valves, mitered bends, compound 90
- 2 degree bends, and diameter reductions of at least two sizes
- 3 • Detect defects resulting from both internal and external
- 4 corrosion through the use of MFL sensors
- 5 • Minimize the number of hot taps
- 6 • Minimize extent of excavations needed for launching

7 In 2002, a preliminary investigation was conducted into the feasibility of
8 developing integrated locomotor/sensor robotic system for the inspection
9 of presently unpiggable LDC-owned pipelines. Two proposals were
10 funded, from Foster-Miller/PII and Automatika/Maurer Engineering. Each
11 of these teams produced preliminary designs. Additional R&D is required
12 to further develop the systems.

13 This R&D will involve a Phase II effort to develop and test the following:

- 14 • Foster-Miller/PII System
 - 15 - Locomotor and inspection sensor application
 - 16 - Performance testing
- 17 • Automatika/Maurer Engineering System
 - 18 - Test critical technologies
 - 19 - Wireless
 - 20 - Locomotor
 - 21 - In-pipe battery recharge
 - 22 - Inspections sensor application

(8) Alternatives to Squeeze-Off in Stopping Gas Flow in Plastic Pipe:

Gas pipes have been manufactured from plastic materials since the 1960's. Over 600,000 miles of plastic pipe are in use in the U.S. for gas mains and gas services. One concern with these materials is resistance to slow crack growth, especially for older plastic materials. Slow crack growth can initiate internally through rock impingement, by inclusions, or by the effects of squeeze-off. Once initiated, slow crack growth proceeds through the pipe material leading to premature failure and gas leakage.

Squeeze-off is commonly used to stop the flow of gas in plastic gas pipes. The use of squeeze-off can initiate the development of slow-crack growth, leading to the premature failure of the pipe.

This project will develop an alternative to the squeeze-off technique which will permit the stopping of gas flow in a plastic pipe without damaging the pipe or initiating slow crack growth, thus extending the useful life of plastic pipes presently in use. This will create significant operating and maintenance cost savings for gas utilities.

The objectives of this project are to: (1) Evaluate technologies, techniques, tools or equipment that have the potential to stop gas flow in a plastic pipe without squeezing or deforming the pipe, (2) Select the technology(s) with the greatest potential and perform laboratory and field experimental to determine its performances in stopping gas flow, (3) Perform plastic materials test on samples of pipe on which this technology has been used to determine its effect on the material performance

1 characteristics of the pipe, (4) If necessary, modify the technology to make
2 it suitable for gas operations field use.

3 **(9) Service-Applied Main Stopper:** This project focuses on lowering the
4 costs associated with emergency gas shut-off due to third-party damage,
5 through the development of an innovative tool and method of use. Current
6 field practices to isolate the damaged section of pipe involve multiple
7 excavations to set stopping or squeeze-off equipment as well as multiple
8 customer shut-offs. The Service Applied Main Stopper (SAMS) project
9 objectives are to: (1) Develop technology and the necessary tools that will
10 utilize existing customer service lines and meter sets to isolate pipe
11 ruptures and stop the flow of gas, (2) Reduce costs by minimizing
12 excavations through the use of the SAMS "no-dig" technology, and (3)
13 Decrease the isolation area, which will reduce customer outages and
14 impact due to third-party main damage.

15 Service lines allow safe entry to the gas main. By inserting a stopping
16 device through the customer's meter valve, crews can isolate the
17 damaged section between neighboring customer service lines and stop
18 the flow of gas.

19 Developing this technology will resolve two major issues: (1.) the costs
20 associated with third-party damage repairs and (2.) the ability to isolate
21 and stop a ruptured gas main. The costs involved with third-party
22 damages are high due to the labor associated with the number of
23 excavations required to isolate the damaged area. Addressing the

1 ruptured main, without having to make any excavations, would allow
2 crews to decrease the time required to stop the blowing gas, decrease
3 total repair allocations and substantially minimize the costs in restoration
4 of pavement and landscaping. All of this will be performed remotely, at
5 the customer's meter, which also increases crew safety. Under many
6 circumstances, the ideal location to isolate a damaged section of main
7 cannot be utilized due to a number of complications (other existing utility
8 lines, pavement issues, etc.); however, this device does not discriminate
9 against surrounding factors because the existing service line acts as a
10 safe conduit to the main.

11 **(10) Combination Residential Space/Water Heater:** GTI is seeking to
12 assess the performance via field testing of an optimized condensing water
13 heater in combination space/ water heater applications. The system will
14 eliminate the need for a space heater, using the water heater for both
15 water and space heating.

16 The U.S. DOE and GTI are currently cofunding technology development of
17 the condensing water heater. The high-efficiency, condensing water
18 heater uses porcelain coating on both sides of the heat exchanger to
19 avoid corrosion and keep manufacturing costs down (by avoiding the use
20 of stainless steel). It has an extremely high Energy Factor of 0.77 and a
21 heat exchanger efficiency of over 90%. However, field testing and system
22 design in a real-world environment is critical to minimizing the technical
23 risk on this project.

1 Condensing water heaters have Energy Factors approaching the high
2 .70's, however; often, the increased cost in production and installation
3 outweighs the cost saved from energy. Producing condensing water
4 heaters that are efficient and more cost effective would greatly benefit the
5 consumer, manufacturer and nation. The cost of a condensing water
6 heater can be reduced (possibly by as much as 30%) by coating a
7 standard heat exchanger with porcelain. Presently condensing heat
8 exchangers use stainless steel.

9 In Phase 1, the existing furnace and water heater are replaced with a
10 power vent water heater combination heating system. Baseline data is
11 gathered on the performance and energy consumption of the power vent
12 combo system until April 2004. At that time Phase 2 will commence and a
13 high-efficiency, optimized, condensing water heater will replace the power
14 vent water heater. The performance and energy consumption of the
15 condensing water heater will be closely monitored for a 12-month period.

16 The field test will validate superior operational performance and comfort
17 as well as any economic benefits associated with the utilization of a low-
18 cost condensing water heater for space and water heat in various climates
19 throughout North America. In addition, the field test will validate to the
20 utility and homeowner the value of combination systems in new and
21 retrofit heating applications.

22 **(11) Heating-Only Residential Heat Pump:** This R&D will further the
23 development of the Ambien heating-only gas heat pump, which offers

1 heating efficiencies of 120-140%. Prototype design and field testing in
2 real-world environments will be part of this effort.

3 MichCon, as an investor, will provide the final authorization as to where
4 their research-funding dollars are applied.

5 **Q. What have been the results of GTI's R&D efforts to increase the safety and**
6 **reduce the cost of gas transmission and distribution systems?**

7 A. GTI research focused on the fundamentals of polyethylene (PE) pipe, especially
8 fracture mechanics, failure analysis, and joining integrity in an effort to lower the
9 technical risks and increase the confidence in PE pipe. When GTI was created,
10 plastic pipe comprised about 20% of all new distribution mains; today, non-
11 corroding PE, with a cost of about half that of coated steel pipe, comprises over
12 90% of all new main installations.

13 **Q. Are there other examples of operations-related R&D?**

14 A. Yes. Most gas mains and services installed in the 1970s used trenching tools
15 which tore up the surface and subsurface, increasing restoration costs and risked
16 penetrating near-surface utility lines. Six years of GTI research yielded the first set
17 of guided horizontal boring tools which are now in general use throughout the gas
18 industry, providing substantial O&M cost savings.

19 **Q. Has GTI R&D improved operational safety?**

20 A. Yes. For instance, GTI developed the optical methane detector (OMD). This
21 device works by shining a laser beam from a vehicle to quickly and reliably scan
22 streets for methane leakage. Many LDCs conduct required leak inspections by a
23 walking survey; the OMD will allow LDCs to convert to driving surveys with a

significant reduction in response time and reduction in labor cost. Also, GTI's gas transmission R&D introduced low-NOx controls for reciprocating engines and gas turbines used at large compressor stations.

Q. What R&D issues and challenges remain for GTI?

A. I believe there are substantial remaining issues for gas supply, delivery, and use that have major impacts on gas consumers, dollarized benefits, environmental benefits, and safety benefits. There are many vital reasons for continuing the work GTI has begun. I will describe a few of the challenges that are ahead of us.

Advanced laser-based drilling and fracturing technologies are in the basic research stage and require a substantial amount of funding to carry them forward.

Totally new sources of natural gas supply may be required to ensure domestic gas supply security. A vast supply resource may be in natural gas hydrates but DOE's basic research has not yet lowered the technical unknowns and risks to permit even exploratory production.

Substantial research is needed to enhance the confidence in current nondestructive evaluation (NDE) techniques used to inspect natural gas pipelines.

A substantial portion of the national pipeline system is not "piggable"; that is, valves, bends, turns, reduced-diameter pipe sections, or other obstructions prohibit internal inspection by moving a mechanical device, or "pig", through the pipe.

Further, current NDE tools and technologies can detect pipe wall thinning and circumferential flaws but other types of flaws, such as stress corrosion cracking and axial flaws, are very difficult to detect. Only additional R&D can ameliorate

1 these and other issues such as pipeline coatings lifetime determination and
2 microbiologically influenced corrosion.

3 Despite 20 years of research, we are still unable to reliably locate buried plastic
4 pipe under all types of soil and moisture conditions. Tracer wire laid above the
5 pipe is helpful but, since it can corrode or break, locating plastic pipe by tracer wire
6 is not always reliable.

7 The guided horizontal boring tools described earlier are guidable from point to
8 point as well as steerable; however, they still cannot "see" in front of themselves
9 underground. The ability to locate sewer pipes, utilities and other obstacles is still
10 an important and unresolved safety issue.

11 Infrastructure Security is at the forefront of national attention following the events of
12 9/11. R&D in this area is still uncharted; yet the "cyber" and physical security of
13 our natural gas infrastructure is critical to gas consumers and the national
14 interests.

15 Environmental issues surrounding old manufactured gas plant sites will cost
16 millions of dollars to clean up. Environmental research, beginning with the
17 determination of environmentally acceptable endpoints ("how clean is clean?"), is
18 still required to minimize environmental compliance costs and yet still answer
19 regulatory concerns.

20 End-use programs that are under development but which will not be able to
21 proceed without continued funding include a low-cost, fully condensing residential
22 water heater which is over 92% efficient, a residential heating-only absorption-
23 based gas heat pump with a heating COP of 1.4, and an industrial super-boiler

1 with efficiencies over 96% currently being funded by DOE as a laboratory sub-
2 scale pilot project.

3 A low-cost residential/commercial fuel cell is still not on the horizon. The private
4 sector and DOE are developing a host of technologies for distributed generation,
5 including larger fuel cells, reciprocating engines, and microturbines. However,
6 their successful integration into the gas distribution system and electric grid is still
7 not assured, emissions and costs (compared to central station generation and
8 electric T&D system upgrades) need to be analyzed, and their impact on the
9 reliability of the gas and electric infrastructure has not yet been documented.

10 **Q. How was GTI funded in the past and how is it currently funded?**

11 A. Since it was established in 1977, GTI was funded through a FERC-authorized
12 surcharge on gas transported over the interstate pipelines. LDC customers
13 supported GTI R&D through upstream suppliers' prices which were in turn charged
14 under the retail cost of gas. The FERC decided to discontinue the surcharge at the
15 end of 2004 and transfer the funding authority to the state jurisdiction. Since that
16 time, numerous states have approved the recovery of GTI R&D.

17 **Q. What level of funding is GTI seeking from local distribution companies that**
18 **are coming before their state jurisdictions in request of general base rate**
19 **changes?**

20 A. GTI has performed an analysis of needed distribution operations and increased
21 efficiency R&D only (*not* including needed supply and transmissions R&D). This
22 needed R&D comes to about \$40 million per year nationally. (This of course is not
23 the total universe of worthwhile projects that could be funded.) Divided by 1.41

1 trillion cubic feet (Tcf) of gas volumes approved for R&D collection and 50% of the
2 potential 1.72 Tcf of possible gas volumes (that might be filed for and approved for
3 recovery across the country), this gives us a funding unit of about 1.76 cents per
4 Mcf. Given this calculation, GTI has been recommending that LDCs who seek to
5 participate in the GTI research request adoption of a 1.74 cents per Mcf cost
6 recovery from their state commissions. This would be a slightly conservative goal
7 for the R&D surcharge. The 1.74 cents is also consistent with the Federal Energy
8 Regulatory Commission (FERC) approved charge from the GTI R&D program up
9 until 1998, when parties agreed to reduce and then eliminate the FERC-approved
10 charge. This is also the rate GTI has recommended in cases before other state
11 commissions.

12 **Q. What other states and LDCs are already participating in GTI's state funding**
13 **program?**

14 **A.** There are 20 states currently authorizing research funding for GTI-related
15 research. They include: AL (Alabama Gas), DE (Conectiv), FL (TECO Peoples
16 Gas), ID (Avista, Intermountain) , IL (Atmos Energy, Nicor), KY (Atmos Energy,
17 Columbia Gas of KY – NiSource, Delta Natural Gas) , MN (Minnegasco –
18 CenterPoint), MS (Mississippi Valley Gas – Atmos Energy), NC (Piedmont), NH
19 (Bay State Gas – NiSource), NJ (Public Service Electric & Gas), NM (PNM), NY
20 (KeySpan Energy, New York State Electric & Gas, Rochester Electric & Gas,
21 Consolidated Edison, National Fuel Gas Distribution, Central Hudson, Niagara
22 Mohawk) OK (Oklahoma Natural Gas – ONEOK), OR , PA (National Fuel Gas

Distribution), UT (Questar), VA (Atmos Energy), WA (Avista, Intermountain), WY (Questar)

Q. What criteria should be used by the Commission in determining whether R&D expenses should be recovered from ratepayers?

A. The following criteria should be used by the Commission in determining whether R&D expenses should be recovered from ratepayers; if the expenses are not more than minimally funded by a bona fide private sector entity:

Distribution System Integrity

R&D to provide the scientific basis to define distribution integrity management plans, including: (1) a process for continual integrity assessment and evaluation, (2) an analytical process that integrates all available information about natural gas main integrity and the consequences of failure, and (3) repair criteria to address issues identified by the integrity assessment and data analysis.

R&D to develop protocols for gas local distribution company (LDC) owned gas pipelines in high consequence areas, for direct assessment of internal corrosion, external corrosion, and stress corrosion cracking.

R&D to develop equipment, tools, and software to aid in the direct assessment or internal or external inspection of natural gas LDC-owned pipelines and distribution mains, including, but not limited to: magnetic flux or ultrasonic inspection devices and sensors, smaller inline inspection tools (pigs) for gas mains, coatings accelerated testing and evaluation, plastic pipe accelerated testing and evaluation, and software tools to identify locations of highest risk.

1 R&D to develop approaches to minimize third-party damage, the biggest cause of
2 distribution system incidents, including, but not limited to: underground locating
3 techniques for use with horizontal boring tools, plastic pipe location equipment,
4 and sensors to detect third-party proximity to gas pipe.

5 **Distribution System Safety**

6 R&D to develop leak survey, location and pinpointing tools, leak stoppage and
7 repair technology, keyhole technology, internal lining devices, cast iron repair and
8 replacement techniques, and plastic pipe joint integrity studies.

9 **Distribution System Deliverability**

10 R&D to ensure deliverability of natural gas to customers at all times of the year,
11 including, but not limited to, studies and techniques to develop enhanced
12 deliverability techniques and equipment for natural gas storage, lining or insertion
13 techniques to increase pressure in gas mains within maximum allowable pressure
14 limitations, and evaluation of higher-pressure plastic pipe.

15 **Low-Income-Customer Increased-Efficiency End-Use Equipment**

16 R&D to develop equipment, procedures, and software to reduce gas use for low-
17 income customers, including, but not limited to, high-efficiency combination
18 appliances (e.g., space/water heaters), and high-efficiency, low-cost furnaces,
19 water heaters, ranges, and other traditional gas using equipment for low-income
20 and other residential customers, system studies and "smart" sensors and control
21 devices to optimize energy use and comfort in low-income homes.

1 **Consumer Safety**

2 R&D to enhance indoor air quality (including CO and NOx), minimize mold and
3 bacteria/virus formation, ensure proper and safe natural gas equipment venting
4 system design and construction, for residential and commercial buildings. This
5 R&D should be directed at issues such as natural gas equipment, venting, and
6 health and safety impacts that cut across appliances, and are not specific to one
7 manufacturer.

8 **Q. Would an LDC be required to apply for recovery of R&D in accordance with**
9 **the above criteria?**

10 A. It would be up to the individual LDC to apply for recovery of R&D expenses.

11 **Q. Should LDCs who demonstrate that they meet the criteria listed above be**
12 **assured of rate recovery?**

13 A. Yes. There should be a rebuttable presumption that LDCs who meet the criteria
14 listed above will be able to recover the R&D expenses in subsequent rate
15 proceedings.

16 **Q. What rate recovery mechanisms should be considered for Michigan LDCs**
17 **who meet the criteria listed above?**

18 A. A surcharge of no more than the 1.74 cent/Mcf, as approved in other states,
19 could be authorized for Michigan LDCs who demonstrate that they meet all of the
20 criteria listed above. If an LDC chose to fund projects that met some of the
21 criteria, but not all of the criteria, the Commission could include in base rates an
22 amount representing the amount of LDC funding that satisfies the criteria. LDCs

1 should be able to choose specific R&D projects that benefit their customers and
2 fund only those projects.

3 **Q. Would intervenors be able to challenge the amount of R &D funding sought**
4 **by an LDC in each rate case?**

5 A. An intervenor could challenge in a general rate case whether or not the criteria
6 were met. The burden of proof would be on the LDC to demonstrate that the
7 criteria were met. However, an intervenor would have a heavy burden of proof if
8 it chose to rebut the presumption that expenses that met the criteria should be
9 funded by ratepayers.

10 **Q. What do you have to say in conclusion?**

11 A. Over the past twenty-five years, gas consumers have realized billions of dollars
12 of benefits from GTI's R&D. Our overall consumer benefit-to-cost ratio is 8/1,
13 including all R&D costs and benefits from commercialized products and services.
14 For instance, GTI's June 2003 submission to the FERC contained a research
15 benefits report that is attached as GTI-1 (RBE-1). Based on our over twenty-year
16 track record of maintaining benefit-cost ratios of over 8:1, I believe that in the
17 future GTI can sustain this benefit cost ratio for Michigan gas consumers.

18 The guidance from public utility commissions and LDCs as well as others (such
19 as consumer advocates and environmental groups) will ensure the selection of
20 specific R&D projects that are appropriate to and offer benefits for Michigan gas
21 consumers.

22 Continuation of GTI's R&D programs is absolutely critical for the continued
23 supply, transport, and use of natural gas as a current and future environmentally

1 benign, domestically produced energy source for Michigan and for the United
2 States.

3 **Q. Does this conclude your prefiled testimony?**

4 **A. Yes it does.**

STATE OF MICHIGAN
BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

In the matter, on the Commission's own motion)
to investigate the appropriateness of instituting)
a surcharge to assist in the funding of the)
GAS TECHNOLOGY INSTITUTE)

MPSC Case No. U-14561

REBUTTAL TESTIMONY

OF

RONALD B. EDELSTEIN

ON BEHALF OF

THE GAS TECHNOLOGY INSTITUTE

April 25, 2006

P. 2

1 **Q Please state your name and business address.**

2 A My name is Ronald Edelstein. My business address is 1700 South Mount
3 Prospect Road, Chicago, IL 60618.

4 **Q By whom and in what capacity are you employed?**

5 A I am employed by the Gas Technology Institute (GTI) as Director, State
6 Regulatory Programs.

7 **Q Are you the same Ronald Edelstein that submitted direct testimony in this**
8 **proceeding on January 31, 2006?**

9 A Yes.

10 **Q Have you reviewed the direct testimony of the Attorney General and**
11 **Consumers Energy filed in this case on March 7, 2006?**

12 A Yes

13 **Q Do you believe there is any realistic possibility that the Federal Energy**
14 **Regulatory Commission (FERC) or any other federal agency will impose a**
15 **surcharge for natural gas research and development (R&D) at the national**
16 **level, as suggested in the testimony of Ms. Polich for Consumers Energy?**

17 A. No.

18 **Q Why do you believe a national surcharge is not a realistic possibility?**

19 A The FERC phased out the national surcharge that was applied to FERC-
20 regulated pipeline companies in 1998, requiring a termination of the surcharge by
21 the end of 2004. On November 18, 2004, in Docket No. RP04-378-000, FERC
22 denied a request by GTI to continue the surcharge. (November 18 order).

23 In its ruling, the FERC stated:

1 "We do not agree that continued reliance on mandatory funding for RD&D
2 is necessary. If the industry and consumers demand a form of cooperative
3 effort in RD&D, they will be accommodated without the mandatory funding
4 GTI seeks here. ..Finally, if GTI is correct that RD&D will elicit only
5 inadequate financial support, then forcing the industry and its customers to
6 pay for GTI-managed RD&D has not been justified." November 18 order,
7 pp. 22-23 (Footnote omitted)

8 **Q Did FERC base its decision to forego a national surcharge on the**
9 **accomplishments of GTI or its predecessor the Gas Research Institute**
10 **(GRI)?**

11 **A** No. For over 27 years, beginning with its decision in *Gas Research Institute*,
12 Docket No. RM77-14, 2 FERC # 61,259 (1978), FERC has confirmed the fact
13 that GRI and GTI have made significant accomplishments in R&D. As noted by
14 Staff witness Susan Devon, even the Attorney General has recognized that "both
15 the gas distribution companies and their customers benefit from the R&D
16 activities of GTI."

17 **Q Is there a feasible way to impose a national surcharge on local distribution**
18 **companies (LDCs)?**

19 **A** No. FERC does not have rate jurisdiction over LDCs and could not require LDCs
20 to collect a surcharge from their customers.

21 **Q The Attorney General recommends that funding of R&D be voluntary on the**
22 **part of both gas distribution companies and ratepayers. Did FERC**

1 **contemplate a funding mechanism that was voluntary on the part of 60**
2 **million ratepayers?**

3 A No. FERC, in permitting "voluntary" funding of R&D costs, contemplated the
4 submission of individual requests from pipeline companies for recovery of R&D
5 costs. See November 18 order, p. 23. FERC also encouraged the use of a
6 "check the box" system for contributions from LDCs and other entities, but
7 recognized that the jurisdiction for such a system would rest with the state
8 commissions. Ms. Devon's testimony reflects what FERC had in mind for a
9 "voluntary" program. She proposes that LDCs who voluntarily agree to use GTI
10 for R&D could recover from their customers up to \$.0174 per Mcf in a general
11 rate proceeding. GTI can support this approach.

12 Q **The Attorney General cites your testimony before the Georgia Public**
13 **Service Commission relating to the benefit/cost ratio of GTI's R&D**
14 **programs. Do you believe the benefit/cost ratio of GTI's work is 4-to-1 or 8-**
15 **to-1?**

16 A From the June 2004 benefits analysis exhibit submitted to the FERC, GTI's
17 benefit-to-cost ratio for its entire FERC-funded R&D program is 8-to-1. The
18 benefits include R&D in supply, end use, and gas operations. The costs include
19 the costs of the entire R&D program.

20 The state-level R&D program proposed for the state of Michigan (as does the
21 proposed Georgia R&D program) includes only end-use and gas operations
22 R&D. From the FERC benefits paper, the net present value of total benefits was
23 \$4.94 billion. Benefits from Supply were \$1.58 billion. Subtracting those from

1 the benefits gives \$3.36 billion net present value of benefits. Conservatively not
2 reducing R&D costs (i.e., not subtracting out the costs of supply R&D), which
3 totaled \$619 million net present value over 5 years, gives a **benefit cost-to-cost**
4 **ratio of 5.4-to-1** for end-use and operations R&D.

5 **Q How will the benefits accrue to gas customers? Are they real dollar**
6 **savings?**

7 **A** The very nature of R&D is that there is risk involved in the projects, with a
8 probability of technical and commercial success. Thus, not every project will be
9 successful. R&D investment is not like putting money in a bank account or even
10 a mutual fund. Only certain projects will be technically successful. Further, even
11 of those that are technically successful, only a certain portion will be
12 commercialized and made available for purchase by Michigan consumers or use
13 by Michigan gas local distribution company (LDC) in their gas operations.

14 Additionally, it will generally take two to five years for an R&D project to be
15 completed and brought to the market. However, one of the benefits of
16 Michigan's LDCs joining a collaborative program like GTI's Operations
17 Technology Development (OTD) or Utilization Technology Development (UTD) is
18 that the R&D programs have been under way for three and two years,
19 respectively. Thus, some of the technologies under development could be
20 technically proven and reach the marketplace as early as 2006. One of the more
21 promising technologies very close to proof of concept, for example, is the "look
22 ahead underground" feature being developed for horizontal boring tools.

90

1 Even though R&D is not like a bank account, this does not mean that there will
2 not be successes. Even if only one project out of five is successful, these will
3 and have offered enough benefits to keep the benefit-to-cost ratio at 5.4-to-1 to
4 operations and end-use R&D. As an example, the first fully condensing (94%
5 efficient) furnace was developed by GTI (actually its predecessor GRI) in the
6 early 1980's. This was a major breakthrough, with only 6% of the input energy
7 turned into waste heat. Typical furnaces at that time were 60% efficient, with
8 40% of the energy turned into waste heat. However, even though this was
9 commercialized by Lennox in the mid-1980's, and copied by other furnace
10 manufacturers after that, it took until natural gas prices rose in the 1990's for the
11 fully condensing high-efficiency furnace to really hit its stride. Between 1995 and
12 2000 (the last year data is available), high-efficiency (90% +) furnace sales in
13 Michigan totaled 354,353 units! These had a net present value (subtracting out
14 their higher first cost) of over \$560 per furnace, or over \$198 million to Michigan
15 consumers. Other major "winners" with real dollar benefits include horizontal
16 boring systems and the optical methane detector for gas operations,
17 unconventional gas R&D, including coalbed methane and Michigan Antrim shale
18 research, and more efficient residential and commercial appliances.

19 **Q What about the "difficult to quantify" benefits discussed in your testimony**
20 **in Georgia?**

21 **A** The benefits of GTI's research on Carbon Monoxide monitors, indoor air quality,
22 water heater flammability, and appliance venting issues were significant and

1 resulted in better quality of life and increased safety and health for Michigan's
2 consumers, but are difficult to quantify in simple dollar terms.
3 Other items, like pipeline integrity management and distribution integrity
4 management protocols, will result in avoided costs which will in turn lead to the
5 more efficient use of LDC resources to meet regulations and ensure system
6 integrity.

7 **Q Does this complete your testimony?**

8 **A Yes.**

1 JUDGE CUMMINS: With regard to the
2 exhibit, we'll withhold ruling, as I will on any
3 exhibits, until the end of cross-examination.

4 At this point in time, I'm assuming
5 you're tendering the witness for cross-examination,
6 Mr. Nelson?

7 MR. NELSON: That's correct, your Honor.

8 JUDGE CUMMINS: Very well. Any questions
9 of this witness? Mr. Strong, we'll begin with you.

10 MR. STRONG: Just a few, your Honor.

11 CROSS-EXAMINATION

12 BY MR. STRONG:

13 Q Can we sort of set some ground rules here for
14 cross-examination: One being is GRI and GTI basically
15 one and the same; would you agree?

16 A GRI was one of the two groups that merged, the other
17 which is the Institute of Gas Technology, into GTI, the
18 Gas Technology Institute.

19 Q So when I ask questions, could you please assume that GRI
20 and GTI are basically one and the same or
21 interchangeable?

22 A Yes, I will.

23 Q O.K. Thank you.

24 Now, looking at the budget for GRI, in
25 sort of rough numbers, could you tell us what it was on
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1 an average over the last ten years?

2 A Yes. The budget for GRI/GTI went from a peak of about
3 \$212 million in '92, since then it has moved downwards.
4 In '98 it was about \$174 million. The FERC-approved
5 piece of that went from that level down to zero in 2000,
6 at the end of 2004, so it wasn't exactly linear, but
7 moved downward. In addition, the voluntary piece of
8 that, that is, the non-FERC piece of that, plus funding
9 from the federal government, moved upwards from some \$15
10 million in 1998 to some \$60 million today, in 2005-2006.
11 So our current budget, no more FERC budget, is on the
12 order of \$50 to \$60 million a year.

13 Q And the source of that funding is what in general?

14 A About half that money comes from the Department of
15 Energy, Department of Transportation, Federal R&D
16 budgets, and the other half comes from gas, local
17 distribution companies through rate recovery, the 21
18 states I indicated, and some pipeline companies are
19 contributing dollars to the program as well, and a few
20 other entities as well, some private industry.

21 Q Now, GTI or GRI over the years has developed certain
22 technologies and processes and so forth. Have either
23 organization or both organizations earned any licensing
24 revenue or, let's say, patent-related revenue or any
25 other sort of funds from the processes and so forth that

1 have been developed as a result of this funding and
2 research?

3 A Yes, yes. Patents and licensing and royalties have been
4 earned as a result of the research.

5 Q And how much of the budget is comprised of that?

6 A It varies year to year, but it typically runs \$3 to \$6
7 million a year. We have delivered some 400 products'
8 processes and techniques to the, you know, developed and
9 brought to the market over the 1977 to 2006 time frame.

10 Q So I take it, then, if you develop something new, then
11 the company or the Institute would seek a patent for that
12 particular device or invention?

13 A Yes, if there is new knowledge, we would seek a patent
14 for that device.

15 Q And then any licensing, royalty or other income is just
16 basically folded into the overall budget as opposed to
17 being sent back to the folks who actually provided the
18 research funds for that?

19 A It depends on the program. With the Department of Energy
20 and California Energy Commission money, for instance, the
21 royalties accrue to the general company. For operations
22 technology development and utilization technology
23 development, which are programs funded by the gas local
24 distribution companies, the dollars remain with
25 operations tech development program and utilization tech

1 development to be spent within those categories. To
2 defer company and ratepayer funding of R&D, they can use
3 the royalties then to pay for that.

4 Q Can they use the royalties for any project that they
5 choose?

6 A They can, any project within that, those two sectors,
7 yes, within the criteria of those sectors, yes.

8 Q And that's something that is decided by GTI, right?

9 A No. No. GTI, in the FERC days, GTI, with its advisory
10 groups and public interest advisers and company advisory
11 groups, decided where the dollars would go. Now, under
12 the voluntary program, dollars are decided by each
13 company. So each company with commission and consumer
14 advocate oversight decides where each individual dollar
15 will go in the voluntary program. So a major shift in
16 philosophy now.

17 Q So in what you term the voluntary program, the royalty
18 revenue or licensing revenue and so forth, that's decided
19 in terms of where it's going to be applied by some
20 advisory group?

21 A That's decided by the technical advisory groups of the
22 operations tech development and utilization tech
23 development programs, for instance, on the emerging
24 technology basic research program, yes, the advisers
25 would decide how to spend that, those dollars.

1 Q And who makes up these advisors?

2 A The advisors are typically, for operations tech
3 development, it's operations' personnel from the gas
4 local distribution companies, anywhere from, you know,
5 manager level up to senior V.P. of operations for the
6 companies. For utilization tech development, it's
7 someone that deals with the consumers on that side of it
8 would make that decision on those activities.

9 Q And so how many GTI personnel would be on this board?

10 A None. None.

11 Q So if we were to have a program that was funded by, let's
12 say, a local distribution company here in the State of
13 Michigan, would you anticipate that there would be a
14 board member from this particular utility?

15 A Yes, I would. I would.

16 Q And would they have a right to have a board member?

17 A Yes, they would. They would. And in addition, they
18 would have a technical person. In addition to a board
19 member, they would have a technical person that would
20 actually choose the projects for their company, they
21 decide where every dollar goes with, you know, commission
22 and consumer advocate oversight.

23 Q Now, is one of the goals of GTI to come up with devices
24 that would save natural gas?

25 A Yes, yes, increased efficiency is one of our goals.

1 Q Now, in the context of your work, do you ever review
2 American Gas Association studies with respect to
3 conservation trends?

4 A Yes, we look at American Gas Association studies. We
5 look at American Council for an Energy Efficient Economy,
6 ACEEE, studies as well.

7 Q And would you say that, let's say, the AGA studies have
8 documented a trend of reduced consumption by end users of
9 natural gas over the last 20 years?

10 A With respect to the residential customers, the per house
11 load in general has been dropping across the country,
12 yes.

13 Q And that's over the last 20 years, correct?

14 A Yes.

15 Q In the context of conservation, has there been any
16 acceleration in the trend as a result of the increased
17 commodity prices that we've experienced over, say, you
18 know, the last four to six years?

19 A Particularly the last winter, there was definite shifts.
20 There was also demand destruction in the industrial
21 sector as well, people just simply closing down for not
22 being able to pay for the energy. But yes, energy
23 efficiency has become more important.

24 Q Can you define demand destruction for us?

25 A Yes. Demand destruction is either the closing down of an
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1 industrial plant because of the fuel prices, or actually
2 the industrial plant would leave the country and go,
3 fertilizer companies, go to Saudi Arabia or other
4 countries to seek raw natural gas at lower prices.

5 Q Would you agree that there used to be approximately 20
6 fertilizer plants located in the United States and
7 producing fertilizer, and that has been reduced to one to
8 two plants?

9 A I don't know the numbers, but it's been a tremendous
10 reduction in fertilizer plants in this country, yes.

11 Q And has there been demand destruction in the context of
12 the chemical industry in the U.S.?

13 A Yes, there has been.

14 Q And has Dow Chemical Company closed more than 20 plants
15 over the last three years?

16 A I don't know the numbers, but I wouldn't be surprised.

17 Q In the paper industry, has there been demand destruction
18 there?

19 A I believe so. I believe so. I mean they have a lot of
20 alternative wood products they can use and wood
21 byproduct, but I would presume there has been demand
22 destruction in the paper industry as well.

23 Q Would you agree that since 1998 approximately 100 paper
24 mills have closed?

25 MR. NELSON: Your Honor, I would object.

1 I don't think this witness is qualified to talk about
2 paper mills.

3 JUDGE CUMMINS: I'm going to let it go a
4 little bit further here. But please constrain yourself a
5 little bit, Mr. Strong.

6 A I don't know the number, but I wouldn't be surprised.

7 Q (By Mr. Strong, Continuing): And has there been demand
8 destruction in the plastics industry?

9 A I would presume so, if natural gas or oil is used as a
10 feedstock.

11 Q And do you have any clue or understanding of how much
12 load has been lost as a result of demand destruction in
13 the industrial sector?

14 A I would think it was on the order of one to three
15 trillion cubic feet a year, but I don't have the exact
16 numbers.

17 Q Now, have the appliance efficiency standards been
18 increasing over the past, you know, say ten years?

19 A They have for certain types of appliances; for others,
20 they've remained pretty static. Gas furnaces, the
21 efficiency standards have remained at 78 percent for over
22 a decade. Air conditioning efficiency standards have
23 increased. Water heater efficiency standards haven't
24 changed very much. Most water heaters run about 50- to
25 55-percent efficient in typical residential houses. So

1 it really depends on the market. But there have been
2 increases, but not for the major gas appliances like
3 water heaters and furnaces.

4 Q But, for example, the seer ratings for air conditioning
5 equipment just were raised in January of this year,
6 right?

7 A Yes.

8 Q Now, have there been increases in efficiency in terms of
9 the building codes, in other words, the codes that
10 require certain types of construction?

11 A Yes. The shells have been getting tighter, and depending
12 on the state, there have been requirements for more
13 efficient commercial and multifamily buildings, mostly
14 commercial.

15 Q Now, looking at the budget for GTI, that was somewhat
16 constrained, was it not, as a result of a settlement
17 agreement reached between a number of parties and GRI at
18 that time in 1998?

19 A Yes, it was.

20 Q Were you involved in the negotiations that led up to that
21 settlement agreement?

22 A I was involved in the negotiations, particularly in the
23 setting of the R&D criteria to be used from '98 through
24 2004.

25 Q And you're familiar with the overall settlement

1 agreement, are you not?

2 A Yes, I am.

3 Q And that was submitted by the parties to FERC for
4 approval?

5 A Yes, it was.

6 Q And it was in fact approved by the FERC, correct?

7 A Yes, it was.

8 Q And did that settlement agreement provide for the
9 mandatory -- or I'm sorry -- for the termination of the
10 mandatory funding for GTI as of December 31st, 2004?

11 A Yes, it did.

12 Q Now, in terms of the mandatory funding that was
13 considered by the parties to the settlement agreement,
14 what was the ultimate source of that funding? In other
15 words, who actually paid the money that provided the
16 dollars for the budget for GRI or GTI?

17 A The ultimate source of the money was, for the most part,
18 gas consumers, residential, commercial and industrial
19 consumers. In some cases, netback pricing, the producers
20 pay; in some cases, between rate cases, the LDCs might
21 pay for an increase in the funding unit; and in some
22 cases, since the pipelines were actually sending us the
23 checks, the pipelines paid for pieces of it. But I
24 believe that, for the most part, it was paid by gas
25 consumers.

1 Q The end users?

2 A The end users, yes.

3 Q And did the settlement provide that following December
4 31st, 2004, that the ultimate source of the GTI funding
5 will be voluntary contributions?

6 A The settlement called for voluntary funding beyond that
7 point in time, and the termination of the FERC-approved
8 mechanism.

9 Q Now, looking at the period of time leading up to the
10 settlement negotiations and the ultimate settlement, were
11 you aware that a number of end users, including ABATE,
12 were opponents of the mandatory funding mechanism that
13 had been employed by the FERC to supply the budget
14 dollars for GRI/GTI?

15 A Yes, I was aware of that.

16 Q And in fact, ABATE was a signatory to the settlement, was
17 it not?

18 A I believe so. I know Process Gas Consumers and the
19 Georgia Industrial Group certainly were. I presume ABATE
20 was as well.

21 Q Now, as part of the settlement, was there an agreement to
22 place caps on what was called non-core and core research
23 and development for a period of time following the
24 settlement?

25 A Yes, there was.

1 Q And those caps then were in place until December 31st,
2 2004?

3 A Yes, they were.

4 Q And then they terminated, as did the mandatory funding
5 requirement?

6 A Yes, they did.

7 Q Now, in your testimony you talk about one of the, let's
8 say, devices that were developed was the pulse furnace;
9 do you recall that?

10 A Yes, I do recall that.

11 Q And that was developed by GRI, was it not?

12 A Yes, it was.

13 Q And then it was patented; is that correct?

14 A It was patented, yes.

15 Q And then the patent rights basically were transferred to
16 Lennox; is that correct?

17 A That is correct.

18 Q And then Lennox would pay GRI/GTI a royalty payment as a
19 result of having that patent transferred, or the rights
20 transferred to them; is that correct?

21 A Yes, yes, they did.

22 Q Now, did Lennox have to implement a safety inspection
23 program because of corrosion occurring to the heat
24 exchanger on those furnaces?

25 A It's possible that they did, but the high-efficiency

1 furnaces in general, once Lennox went to stainless steel,
2 corrosion was not an issue; the issue was what happens
3 without stainless steel heat exchanger. Once they went
4 to that mode, there was no corrosion problem. But in the
5 beginning, depending on what they used, there might have
6 been.

7 Q Now, can you tell us -- You know, we've been talking
8 about mandatory contributions and voluntary
9 contributions. Can you tell us what, in your opinion,
10 the difference is between those two?

11 A Yes. With respect to the FERC, which deals with, of
12 course, interstate transmission of natural gas,
13 electricity, et cetera, the mandatory nature of this

14 activity was that the pipelines were, would join the
15 program and would contribute to it; and in my opinion,
16 the FERC felt that the program should be voluntary for
17 the pipelines, and they wanted a, at least based on the
18 settlement, and they wanted the pipelines to be able to
19 voluntarily come in and out of the program as they would
20 and wanted a voluntary approach, that is, to have the
21 jurisdictional companies make their own choices. The
22 FERC also provided for a check-the-box mechanism which
23 would allow the distribution companies to elect to
24 voluntarily contribute to the program; but the FERC said,
25 we don't have jurisdiction over the LDCs, so then it is

1 up to their public utility commissions to make that
2 decision with respect to the LDCs. So both having the
3 LDCs and the jurisdictional pipelines apply for recovery
4 of this was part of a voluntary approach to this program,
5 but that each company would be able to choose for
6 themselves whether or not to participate in this.

7 Q Now, in your opinion, voluntary does not apply to the
8 actual companies that pay for the funding for GTI; is
9 that correct?

10 A You mean each individual consumer?

11 Q That's correct?

12 A Each individual meter. No, in my opinion, voluntary did
13 not apply to each individual consumer. FERC was dealing
14 with the jurisdictional question of those that they
15 regulate.

16 Q Now, the settlement agreement was crafted by GTI and a
17 number of other individual companies; is that correct?

18 A That's correct.

19 Q And how many LDCs participated in those negotiations?

20 A You know, I would say at least 20, maybe upwards of 40.

21 Q And they all signed a statement of support or
22 non-opposition?

23 A They did. There was some, there was some opposition from
24 a group called the East Coast Distributors because of a
25 discounting versus non-discounting issue that was

1 subsequently settled in a little bit later activities.

2 But with that exception, yes, the LDCs all signed up for
3 the settlement agreement.

4 MR. STRONG: O.K. I would like to show a
5 document to the witness, if I may approach.

6 JUDGE CUMMINS: Certainly.

7 MR. STRONG: This is the support
8 signature page.

9 (Document shown to Mr. Nelson.)

10 Q (By Mr. Strong, Continuing): I'm going to hand you a
11 document, if I may. Is this the settlement agreement
12 that was reached and ultimately approved by FERC?

13 (Document handed to the witness.)

14 A Yes, this looks like the settlement agreement.

15 Q (By Mr. Strong, Continuing): Now, I'm going to show you
16 the signature pages, and I want you to count the number
17 of LDCs in light of your previous answer, and tell me
18 whether or not there is anywhere close to 40 LDCs that
19 signed up for that.

20 A No. No, there aren't.

21 Q Not even ten, right?

22 A That's correct. Although, the American Gas Association
23 did sign this for the LDCs. Yes, not even ten.

24 Q How many customers, end-use customers signed up for this?

25 A No end-use customers directly, but the Process Gas

1 Consumers and a number of other groups representing the
2 large industrials I believe did sign this agreement.

3 Q O.K. Let me show you again the support signature sheet.
4 And is Shell Oil Company an end-use customer, is Chevron?

5 A No. Those are producers.

6 Q O.K.

7 A They signed as producers, as far as I know.

8 Q And then PGC you've already mentioned.

9 A Yes.

10 Q Who's that, AISI.

11 A American Institute for Iron and Steel, something of that
12 nature, yeah.

13 Q And then ABATE?

14 A ABATE.

15 Q GIG?

16 A Georgia Industrial Group and The Fertilizer Institute.

17 Q And they represented the end-use customers?

18 A They represented the industrial end-use customers.

19 Q Now, in your testimony you indicated that the market
20 would not spur manufacturers to invest in making their
21 product safe. That's roughly page 6 of your initial
22 testimony.

23 A My testimony was that there are sectors that fall between
24 the manufacturer, the gas LDC and the installer, and in
25 these areas lie some weakness in some of the safety of

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1 the various devices.

2 Q Now, are you aware generally of tort law?

3 A No, I wouldn't say I was aware of tort law.

4 Q O.K. Are you aware generally of any laws that would
5 provide an avenue for customers of a particular product
6 that was manufactured by somebody to sue the manufacturer
7 for safety defects?

8 A I'm aware there are such laws.

9 MR. NELSON: I'm going to object, your
10 Honor. Again, this is going well beyond the
11 qualifications of this witness.

12 JUDGE CUMMINS: I'll allow it, if you can
13 answer.

14 A Just that I'm aware that there are such laws.

15 Q (By Mr. Strong, Continuing): And do they provide an
16 incentive for manufacturers to provide safe equipment?

17 A Certainly.

18 Q Now, is GTI asking for a surcharge to be applied to gas
19 deliveries as a result of this proceeding?

20 A GTI is asking for acceptance of criteria for R&D so that
21 the LDCs, if they make the decision in this state, can
22 voluntarily apply for recovery of R&D charges from the
23 consumers in this state.

24 Q And in terms of the consumers that this would apply to,
25 would it apply to every consumer?

1 A In general, yes, but that's really between the companies
2 and the commission and the various intervenors to deal
3 with that particular issue. Whether, you know, large
4 industrials would receive a discount or not are details
5 to be worked out between the commission and the companies
6 and the various parties involved.

7 Q Assume hypothetically that the industrial segment here in
8 Michigan is emphatically opposed to the surcharge to
9 support GTI. Should that be one of the criteria that is
10 reviewed?

11 A You mean who would, ought to pay for the program.

12 Q Yes. In other words, if they didn't volunteer to pay for
13 it, should that be one of the criteria to determine
14 whether or not they should be surcharged?

15 A From the FERC decision, the voluntary nature is up to the
16 LDCs; but certainly the LDCs need to consider what their
17 customers want or don't want. That will, of course,
18 affect what type of research is done with that money. If
19 the industrials don't participate, then some of the
20 industrial equipment development that GTI could fund,
21 including our very high-efficiency boiler, which you're
22 familiar with the superboiler at 94-percent efficiency,
23 that type of technology wouldn't be pursued if the
24 industrials did not want to participate and the companies
25 agreed that discounting, and the commission agreed that

1 discounting was appropriate.

2 Q Now, in the context of this settlement agreement, it was
3 worked out by you say groups representing industrial
4 customers, GTI, and as you said, producers. Were those
5 the parties that actually determined what voluntary
6 meant?

7 A The decision was reached by the FERC. There were
8 discussions on what voluntary meant, and as part of the
9 settlement discussions.

10 Q Well, isn't it true that a settlement is put together by
11 the parties to a settlement and just sent up to the FERC
12 for approval or rejection, that's all the FERC does?

13 A Yes. But the FERC also commented on the settlement as
14 well.

15 Q But it approved the settlement?

16 A It did approve the settlement.

17 Q Without a change, correct?

18 A Yes.

19 Q Now, in your rebuttal testimony, you talk about a
20 statement that the FERC said this is what voluntary is.
21 Could you give us a citation or read us the language that
22 supports your statement?

23 A I would need to see my attorney for a second to get the
24 paperwork.

25 JUDGE CUMMINS: Certainly.

1 MR. NELSON: Take a five-minute recess?

2 JUDGE CUMMINS: Yeah. We won't make it
3 in-place, let's go ahead and do five in case people need
4 to excuse themselves briefly.

5 (At 9:41 a.m., there was a brief recess.)

6 JUDGE CUMMINS: Let's go ahead and go
7 back on the record.

8 Please proceed, Mr. Strong.

9 MR. STRONG: I was waiting for an answer.

10 A Yes. In the FERC 1998 opinion, FERC refers to Section
11 1.7, it is entitled voluntary funding. This section
12 provides that voluntary funding is permitted during the
13 period '98 to 2004. And it says, all GRI funding will be
14 on a voluntary subscription basis, as will membership.
15 Talks about two things. One, voluntary subscriptions by
16 interstate pipelines for particular research and
17 development projects benefitting consumers may be
18 recoverable in rates if filed for by individual
19 pipelines, subject to challenge. So that's the first
20 piece of it. That is, after the settlement, after 2004,
21 pipelines could individually apply under this voluntary
22 settlement for, and under the definition voluntary, for
23 recovery of R&D for consumer benefits from the FERC.

24 In addition, it says that the pipelines
25 agree to remain as voluntary collection agents for

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- 1 shippers who voluntary choose to support GRI problems
2 through a check-the-box approach on pipeline invoices.
3 The amounts collected through check-the-box are in part
4 pipeline rates, and these will not be approved by the
5 commission. So check-the-box then is all distributors
6 then; distribution companies could then apply under this
7 general voluntary approach for recovery of R&D charges.
- 8 Q (By Mr. Strong, Continuing): Are you looking at a copy
9 of the FERC order?
- 10 A Yes. Yes. Docket No. RP97149-003.
- 11 Q And FERC orders typically have paragraphs, paragraph
12 numbers. Could you cite the paragraph number in which
13 you are referring to?
- 14 A I am on page -- I am on page 8 of the docket. There's
15 not -- it's just a description of Section 1.7. No
16 paragraph numbers indicated.
- 17 Q O.K. So you're not looking at the official copy of the
18 FERC decision; is that correct?
- 19 A I believe I am.
- 20 Q O.K. Let me give you a copy of the FERC decision, and
21 this does have the normal numbering of paragraphs that
22 FERC employs. Are you aware of that sort of convention?
- 23 A Yes.
- 24 (Document shown to Mr. Nelson.)
- 25 Q (By Mr. Strong, Continuing): Handing you a copy of the
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1 Docket No. RP 04-378-000, FERC order. Is that what you
2 were referring to?

3 (Document provided to the witness.)

4 A No. I'm looking at docket RP 97-143-003.

5 Q (By Mr. Strong, Continuing): And is that part and parcel
6 of the settlement?

7 A Yes. Order approving settlement issued April 29th, 1998.

8 Q O.K. You're not referring, then, to the November 18th
9 order?

10 A This was issued April 29th, 1998.

11 Q O.K. And in your testimony you refer to the November
12 18th order; is that correct?

13 A Yes. But we also refer to this order in discovery
14 questions, in particular, dealing with definitions of
15 voluntary funding.

16 Q O.K. And it's your sworn testimony today that that order
17 that you're referring to deals with the settlement and
18 interpretation of the settlement?

19 A Yes, order approving settlement.

20 Q O.K. Let me hand you a copy of that, and ask you --

21 MR. NELSON: Can I see that.

22 (Document shown to Mr. Nelson.)

23 Q (By Mr. Strong, Continuing): Can you point out in this
24 document -- this is a copy of what I think you're
25 referring to.

1 (Document handed to the witness.)

2 A Yes.

3 Q (By Mr. Strong, Continuing): Can you point out which
4 portion of the language you're referring to?

5 A Just you'll note there are not paragraph numbers next to
6 this. O.K. This, I'm referring to this that discusses
7 Section 1.7 and then the footnote 19 on pages 8 and 9,
8 which goes beyond that for discussion of recovery of
9 check-the-box.

10 Q And that's on page 8 of this particular document?

11 A Page 8, and then the footnote is continued on page 9.

12 Q O.K. Would you turn to page 2 of your rebuttal
13 testimony, please.

14 A Yes, I will.

15 Q You're quoting from the FERC order dated November 18th,
16 2004; is that correct?

17 A Yes.

18 Q And on line 5 of your testimony, you talk about, or at
19 least the quote is referencing "forcing the industry".
20 In terms of the reference to industry, what do you
21 understand that reference to be, what industry are we
22 talking about here?

23 A Well, because it says the industry and its customers, the
24 industry in this case would be the natural gas industry,
25 particularly the pipelines and the jurisdictional

1 pipelines if it refers to, if this is a FERC law. So it
2 is the gas industry, principally the pipelines.

3 Q And would customers refer to the end-use customers?

4 A Customers would refer to all customers of the pipelines
5 who are in the main LDCs and large industrials and power
6 generators.

7 Q Now, in the context of the settlement agreement that was
8 ultimately approved by the commission, and by the
9 commission, I mean the FERC, did it delineate what
10 charges would be put on what transporters?

11 MR. NELSON: Your Honor, I'll object. I
12 think the FERC order at this point speaks for itself.

13 JUDGE CUMMINS: I'll sustain the
14 objection.

15 Q (By Mr. Strong, Continuing): Now, would you turn to page
16 3 of your rebuttal testimony. You were referring there
17 to the November 18th, 2004, order, correct?

18 A Yes.

19 Q And could you refer me to a specific paragraph number or
20 page number to the order that you're referring to and
21 read that supporting statement?

22 MR. NELSON: Your Honor, I just object
23 again. I think it serves no purpose in this record to
24 have somebody quote from the FERC order.

25 MR. STRONG: Your Honor, at this point
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1 the witness is saying this is what voluntary means, and
2 he's referring to the FERC order. I want to know, and
3 the record should reflect, what he's referring to.

4 JUDGE CUMMINS: I agree. You may answer
5 the question.

6 A O.K. Can I take a second to confer with my attorney to
7 get that particular order?

8 JUDGE CUMMINS: Certainly. Let's go
9 ahead and stand in place.

10 (Document provided to the witness.)

11 (Witness reviewing the document.)

12 JUDGE CUMMINS: Back on the record.

13 A Yes, there's apparently an incorrect cite there. I
14 apologize for that. Page 15, the top paragraph numbered
15 53. We do not agree that continued reliance on mandatory
16 funding for R&D is necessary. If the industry and
17 consumers demand a forum of cooperative effort in R&D,
18 they can be accommodated without the mandatory funding
19 GTI seeks here. Market-based R&D would better serve the
20 consuming public than the acrimony that has accompanied
21 each and every GRI application since the onset of the
22 program for mandatory funding of cooperative R&D
23 projects.

24 Q (By Mr. Strong, Continuing): O.K. And that's what you
25 say supports your statement, then?

1 A That, and the document I quoted from the 1998 settlement.

2 Q But that's not what you said in your testimony; you said
3 just the November 18th, order, correct?

4 MR. NELSON: Well, your Honor, I object
5 again. I think the reference to the check-the-box does
6 not refer to an order per se. I'm referring to
7 Mr. Edelstein's rebuttal testimony on page 3. He also
8 says FERC's encouraged the use of a check-the-box system,
9 he doesn't attribute that to a specific FERC order. So
10 that could be either the 1998 or the 2004 order.

11 A Yeah. We said that FERC also encouraged the use of
12 check-the-box without a reference to what section that
13 was in. That referred to the 1998 order. I should have
14 cited that.

15 JUDGE CUMMINS: And I do note that it
16 comes after the citation to page 23 of the November 18
17 order, so I will go ahead and sustain the objection on
18 that ground. If you want to restate the question in a
19 different fashion or --

20 MR. STRONG: Well, I just want to make
21 the record clear.

22 Q (By Mr. Strong, Continuing): In connection with your
23 statement regarding voluntary which starts on page 3,
24 line 3 of your rebuttal testimony, it's the statement
25 that you read from the November 18, 2004, order that

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1 supports that; is that correct?

2 A Yes. But the actual definition of voluntary funding is
3 covered in the -- you have to go back to the 1998
4 settlement to pick up the piece that we just talked
5 about.

6 MR. STRONG: O.K. Thank you. I have
7 nothing further.

8 JUDGE CUMMINS: Very well. Any questions
9 by the attorney general?

10 MR. MOODY: Just a couple, your Honor.

11 CROSS-EXAMINATION

12 BY MR. MOODY:

13 Q Good morning.

14 A Good morning.

15 Q I'll refer you to page 3 of your rebuttal testimony.
16 Near the bottom there, it's the question dealing with
17 Georgia Public Service Commission. And my question on
18 that is just, do you know what the status of that case
19 is?

20 A Yes. The commission staff and the companies have not
21 reached a settlement, and as a result, I believe the
22 commission has rejected the entire case and Atmos Energy
23 is refiling their petition for recovery of rate, you
24 know, for a new rate case, including R&D recovery, so
25 they're going to refile and move ahead there.

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1 Q And then followup on an answer that you gave earlier,
2 what -- can you explain a little bit of what the consumer
3 advocate oversight is in these, and can you give me a
4 scenario, say if we had one in this state?

5 A Sure. Couple of things. One is, of course, during --

6 this is just the first step, this generic decision in
7 allowing the company to voluntarily file. When the
8 company does file, I anticipate that the company working
9 with us would list specific projects, as I did in my
10 testimony, for instance, that they wish to fund, and then
11 the consumer advocate would be able to review individual
12 projects and to decide which ones were in the consumer
13 interest and which ones weren't, and through discovery
14 and other means, determine, you know, were there benefits
15 to the consumers or not from the various projects
16 proposed. In addition, we have a public interest
17 advisory committee, which I think you're aware of,
18 composed of four consumer advocates appointed by the
19 NASUCA Gas Committee, and approximately 12 public utility
20 commissioners appointed by the NARUC Gas Committee and
21 Energy Resources and Environment Committee that provides
22 us with philosophical guidance on what R&D is in the
23 consumer interest and what R&D is in the private
24 interest; and in other words, what should be funded with
25 PUC-recovered funds and what shouldn't be. So that would

1 be another avenue, and we would certainly welcome, in
2 fact I offered Mr. Erickson a seat on that if he would
3 like that. So there's no problem with that at all.

4 Q And what type of -- I guess what type of -- I guess maybe
5 go to a scenario again in this state that, you know, when
6 the utilities asked for a program to be brought into
7 their base rate case or whatever, what would the, I
8 guess, the consumer advocate oversight, what does that --
9 so if we determine that it's a consumer product or it's
10 not, how does that affect the case, then, before the
11 commission?

12 A Well, then you would make comments on that during the
13 filing, pass that information to the commission staff and
14 the commission, and then decisions would be made on which
15 projects were acceptable and which weren't. One of the
16 hopes of the generic proceeding were that there are
17 specific criteria listed -- deliverability, system
18 integrity, safety, consumer safety, public safety
19 increased efficiency for low-income customers -- so that
20 if there was general agreement on those criteria and the
21 company projects fit in within those criteria, that would
22 help, but there's no, you know, guarantee as a result of
23 this. So the companies and the consumer advocate and the
24 staff would be able to comment on individual projects and
25 through settlement decide which are in and which aren't

1 and, of course, based on commission decision.

2 Q And if we couldn't reach a settlement, then it would just
3 go through a normal case proceeding and the utility picks
4 what they want, right, and then we just litigate the
5 issue of --

6 A Yes. Now, in some states commissions receive a report
7 once a year on projects chosen, and so do the consumer
8 advocates, and so then each year there could be comments
9 by the commission staff and consumer advocate as to which
10 projects were selected and whether or not they were in
11 the public interest as well. So even beyond the first
12 year.

13 Q And the public interest advisory committee at NASUCA, is
14 that what, NARUC, you were saying?

15 A Yes. NASUCA, the gas committee of NASUCA appoints four
16 members, and the two committees I mentioned that NARUC,
17 appoint 10 to 12 members of commissioners, and that meets
18 twice a year, and they make, you know, they provide us
19 with philosophical guidance on what's in the consumer
20 interest or not.

21 Q And it doesn't really affect on like an individual case,
22 like the utility? I mean that committee doesn't really
23 have any -- I guess they could file comments if they
24 wanted to, but there's no real impact on an individual
25 case here in Michigan?

1 A That's correct. That's correct. It's philosophical
2 guidance for the general program direction of GTI.

3 Q And then move off of that subject. Is the transportation
4 customer considered a shipper, that term, is it used at
5 FERC?

6 A Transportation customer is considered a shipper. I don't
7 know if I'm qualified to make that decision, to offer an
8 opinion on that particular --

9 Q I guess you know what the term -- I guess do you know
10 what the term shipper or how it's defined by FERC?

11 A No.

12 Q O.K.

13 A No.

14 MR. MOODY: And actually, I think that's
15 just about it for cross-examination.

16 JUDGE CUMMINS: Very well.

17 Mr. Middleton?

18 MR. MIDDLETON: I have one question for
19 Mr. Edelstein.

20 CROSS-EXAMINATION

21 BY MR. MIDDLETON:

22 Q Although I anticipated that this is just a clarification
23 of some matter this morning, of the 21 I believe you
24 said, or the 20 some states that have approved recovery,
25 have any of those states approved segmented recovery; in
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1 other words, recovery of R&D only from residential class
2 of customers and not from commercial or any other
3 customer segmentation, if you know?

4 A Some of the commissions have allowed recovery only from
5 firm customers, so yes; but in general, recovery is
6 pretty much across the board. Sometimes it's firm and
7 interruptible, but undiscounted customers.

8 Q So just to clarify, not by customer class, but by the
9 quality of service delivered?

10 A By the quality of service delivered, not by customer
11 class, yes, yes.

12 MR. MIDDLETON: Thank you. I have no
13 further questions.

14 JUDGE CUMMINS: Very well. Ms. Wellman,
15 any questions?

16 MS. WELLMAN: No questions, your Honor.

17 JUDGE CUMMINS: Any questions on
18 Consumers' side?

19 MS. MORRIS: No questions, your Honor.

20 JUDGE CUMMINS: Very well. Any questions
21 by the staff?

22 MS. BARONE: No questions. Thank you.

23 JUDGE CUMMINS: Any redirect, Mr. Nelson?

24 MR. NELSON: Yes, your Honor, just
25 briefly.

1 REDIRECT EXAMINATION

2 BY MR. NELSON:

3 Q Mr. Edelstein, you were asked about the 1998 FERC
4 settlement by Mr. Strong, about the number of gas
5 distribution companies who signed that. AGA was a
6 signatory; is that correct?

7 A They were.

8 Q Do you know how many members AGA has?

9 A Over a hundred.

10 Q O.K. And do you believe AGA was representing those
11 hundred members?

12 A I do. And AGA does not take positions without almost
13 unanimous support of its member companies.

14 Q And you were also asked about the fact that Lennox paid
15 GTI royalty payments for high-efficiency furnace --

16 A Yes.

17 Q -- work? Were those royalty payments then flowed back
18 into more R&D for GTI?

19 A Yes, they were. The royalty payments were approximately
20 a dollar a furnace; we received over the years over a
21 million dollars for that. In fact, the terms of the FERC
22 program were that it actually reduced the funding unit in
23 future years. So the funding unit was reduced as those
24 royalties came in actually. So it did reduce the amount
25 that consumers had to pay for future R&D.

1 MR. NELSON: Thank you. That's all I
2 have, your Honor.

3 JUDGE CUMMINS: Very well. I'm assuming
4 that didn't raise any other questions at this point on
5 behalf of the other parties.

6 MR. STRONG: Oh, it did.

7 JUDGE CUMMINS: Oh, it did. Please go
8 ahead, Mr. Strong.

9 RECROSS-EXAMINATION

10 BY MR. STRONG:

11 Q Did I understand your testimony, you said that the AGA
12 signed this agreement?

13 A Yes.

14 Q O.K. Can I hand it to you. Can you point out where they
15 signed it? Let me show you first of all the support
16 signature sheet.

17 (Document provided to the witness.)

18 MR. NELSON: I believe there's two pages
19 to that.

20 MR. STRONG: It's one page.

21 A There's one page. Oh, it's a do not oppose page.
22 American Gas Association on line 9.

23 MR. STRONG: O.K. Thank you. I have
24 nothing further.

25 JUDGE CUMMINS: Very well. Any other
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1 questions? Hearing none.

2 We have one exhibit, GTI-1, to take up at
3 this point. Any objection to the receipt of this
4 exhibit? Hearing none, Exhibit GTI-1 is received into
5 evidence.

6 You may step down.

7 THE WITNESS: Thank you.

8 (The witness was excused.)

9 JUDGE CUMMINS: I think at this point in
10 time, why don't we go ahead with Consumers' witness, the
11 presentation of their witness, and then we'll get to the
12 attorney general's witness following that.

13 MS. MORRIS: Thank you, your Honor.
14 Parties have stipulated to placing into the record the
15 Direct Testimony of Jill Mills Polich on behalf of
16 Consumers Energy Company. Her direct testimony consists
17 of a cover page and two pages of testimony.

18 At this time, I move to have that
19 testimony entered into the record.

20 JUDGE CUMMINS: Very well. Any
21 objections to the receipt of this testimony? Hearing
22 none, Ms. Polich's testimony will be received into
23 evidence, or actually bound into the record, I should
24 say.

25 MS. MORRIS: Thank you, your Honor.

STATE OF MICHIGAN
BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

In the matter, on the Commission's own motion,)
to investigate the appropriateness of instituting)
a surcharge to assist in the funding of the)
Gas Technology Institute.)
_____)

Case No. U-14561

DIRECT TESTIMONY
OF
JILL MILLS POLICH
ON BEHALF OF
CONSUMERS ENERGY COMPANY

March 7, 2006

JILL M. POLICH
DIRECT TESTIMONY

- 1 Q. Please state your name and business address.
- 2 A. Jill Mills Polich, Consumers Energy, 1945 W Parnall Road, Jackson MI 49201.
- 3 Q. By whom are you employed?
- 4 A. I am employed by Consumers Energy Company.
- 5 Q. What is your current position with Consumers Energy?
- 6 A. My current position is Executive Manager, Gas Engineering, Regulatory and Operations
- 7 Services.
- 8 Q. How long have you held this position?
- 9 A. I have held this position since September 2002.
- 10 Q. What are your responsibilities in this position?
- 11 A. I am responsible for technical and engineering support for Consumers Energy's gas
- 12 division, including regulatory compliance, engineering, pipeline integrity, damage
- 13 prevention, quality assurance, decision analysis and system load studies.
- 14 Q. Please state your educational background and business experience.
- 15 A. I was graduated from the University of Michigan with a Bachelor of Science degree in
- 16 Industrial and Operations Engineering in 1978, and again from the University of Michigan
- 17 with a Masters' degree in Business Administration in 1984. I have held various other
- 18 engineering and supervisory positions at Consumers Energy starting in 1982. I also spent
- 19 five years as a manufacturing engineer prior to starting work at Consumers Energy. I am a
- 20 licensed professional engineer in the state of Michigan.
- 21 Q. What is the purpose of your testimony in this case?
- 22 A. The purpose of my testimony is to state Consumers Energy's position regarding a state
- 23 mechanism for funding of GTI research.

JILL M. POLICH
DIRECT TESTIMONY

1 Q. Please summarize the Company's position with respect to funding for GTI.

2 A. The Company does not support state-by-state funding for GTI. Such a funding mechanism
3 would result in some states subsidizing others that choose not to participate. The Company
4 also does not support GTI's proposal to create a rate mechanism with a presumption of
5 reasonableness for the recovery of expenditures on behalf of GTI to gas utilities that arrange
6 for GTI research. This sort of mechanism continues to place the burden of proof for
7 reasonable use of research funds on the individual utilities. The Company prefers a national
8 surcharge for research funding that would be administered with industry partnership and
9 oversight provided via AGA.

10 Q. Does this conclude your testimony?

11 A. Yes.

1 JUDGE CUMMINS: And that completes
2 Consumers' case?

3 MS. MORRIS: Yes, it does.

4 JUDGE CUMMINS: Very well.

5 With regard to the attorney general, we
6 don't have any exhibits to mark; is that correct,
7 Mr. Moody?

8 MR. MOODY: That's correct, your Honor.

9 JUDGE CUMMINS: Very well. Please
10 proceed.

11 MR. MOODY: I'd like to call to the stand
12 Charles King.

13 C H A R L E S W. K I N G
14 was called as a witness on behalf of Attorney General
15 Michael A. Cox and, having been duly sworn to testify the
16 truth, was examined and testified as follows:

17 JUDGE CUMMINS: Please proceed,
18 Mr. Moody.

19 DIRECT EXAMINATION

20 BY MR. MOODY:

21 Q Would you please state your name for the record.

22 A My name is Charles W. King.

23 Q And can you state your address and company?

24 A My business address, actually it's changed from what it
25 is in my testimony. It is now 1111 14th Street

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1 Northwest, Suite 300, Washington, D.C. 20005.

2 Q And did you file testimony on behalf of the attorney
3 general in this case?

4 A Yes, I did.

5 Q And did that testimony consist of seven pages and an
6 Appendix A and B which are your resume and cases you've
7 worked on?

8 A The copy I have has eight pages, so I may not have the
9 official copy, but I did file testimony and two exhibits.

10 Q Let me double check, make sure.

11 JUDGE CUMMINS: And just for
12 clarification sake, I believe the two items you're
13 referring to are attachments to the testimony rather than
14 actual exhibits; is that correct?

15 A No. First is my resume, the second is my list of
16 appearances.

17 JUDGE CUMMINS: O.K.

18 MR. MOODY: Your Honor, could I take a
19 look real quick at the document?

20 JUDGE CUMMINS: Certainly.

21 MR. MOODY: Make sure we got the same.

22 (Document provided to the witness.)

23 A It appears I did not have the official copy, so I now do.

24 BY MR. MOODY:

25 Q All right. I'll ask you that question again, then. The
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1 testimony that you submitted on behalf of the attorney
2 general, does that consist of seven pages, and in fact
3 the cover page is No. 1, seven pages and an Appendix A
4 and B, A being your resume and B being a list of all the
5 cases that you've worked on or your company?

6 A Yes, I did.

7 Q And is this -- do you have any corrections other than the
8 fact that your address has changed? I don't think I'm
9 going to correct that in the testimony.

10 A A little typo on page 5, line 5. The word "that" should
11 be stricken, very first word in that line. It's a typo.

12 Q And other than that change, is there any other changes to
13 the appendix or anything else?

14 A No, there are none.

15 Q And is this testimony that you've submitted in this case
16 true and accurate to the best of your knowledge?

17 A Yes, it is.

18 MR. MOODY: All right. At this point,
19 your Honor, I'd like to move to bind in his testimony
20 into the record.

21 JUDGE CUMMINS: Very well. Any objection
22 to binding in Mr. King's testimony? Hearing none,
23 Mr. King's testimony is bound into the record.

24 - - -

25

STATE OF MICHIGAN
BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

In the matter, on the Commission's own	)	
Motion to investigate the appropriateness	)	Case No. U-14561
of instituting a surcharge to assist in the	)	
funding of the GAS TECHNOLOGY	)	
INSTITUTE	)	
_____	/	

DIRECT TESTIMONY OF
CHARLES W. KING
ON BEHALF OF THE ATTORNEY GENERAL

Michael E. Moody (P51985)
Assistant Attorney General
Tobacco and Special Litigation Division
7th Floor, G. Mennen Williams Bldg.
P.O. Box 30212
Lansing, MI 48909
(517) 373-1123

March 7, 2006

QUALIFICATIONS

Q. PLEASE STATE YOUR NAME, POSITION AND BUSINESS ADDRESS.

A. My name is Charles W. King. I am President of the economic consulting firm of Snavely, King, Majoros, O'Connor, & Lee, Inc. ("Snavely King"). My business address is 1220 L Street, N.W., Suite 410, Washington, D.C. 20005.

Q. PLEASE DESCRIBE SNAVELY KING.

A. Snavely King, formerly Snavely, King & Associates, Inc., was founded in 1970 to conduct research on a consulting basis into the rates, revenues, costs and economic performance of regulated firms and industries. The firm has a professional staff of 12 economists, accountants, engineers and cost analysts. Most of its work involves the development, preparation and presentation of expert witness testimony before federal and state regulatory agencies. Over the course of its 35-year history, members of the firm have participated in over 1000 proceedings before almost all of the state commissions and all Federal commissions that regulate utilities or transportation industries.

Q. HAVE YOU PREPARED A SUMMARY OF YOUR QUALIFICATIONS AND EXPERIENCE?

A. Yes. Attachment A is a summary of my qualifications and experience.

Q. HAVE YOU PREVIOUSLY SUBMITTED TESTIMONY IN REGULATORY PROCEEDINGS?

A. Yes. Attachment B is a tabulation of my appearances as an expert witness before state and federal regulatory agencies.

Q. FOR WHOM ARE YOU APPEARING IN THIS PROCEEDING?

A. I am appearing on behalf of the Attorney General of Michigan.

DIRECT TESTIMONY

1
2
3 **Q. WHAT IS THE OBJECTIVE OF YOUR TESTIMONY?**

4
5 A. The objective of this testimony is to present the Attorney General's position on the
6 appropriateness of instituting a surcharge to assist in the funding of the Gas
7 Technology Institute ("GTI").

8
9 **Q WHAT SOURCE MATERIALS HAVE YOU EXAMINED IN PREPARING**
10 **THIS TESTIMONY?**

11
12 A. I have read the testimony of Ronald B. Edelstein of GTI in this case and in
13 Docket No. 20298-U before the Georgia Public Service Commission. That was
14 the 2005 application of the Atmos Energy Corporation for an increase in gas
15 distribution rates. I have also read the November 18, 2004 Order of the Federal
16 Energy Regulatory Commission ("FERC") that rejected the application of the Gas
17 Research Institute ("GRI"), the predecessor to GTI, for advance approval of a
18 research and development program and for jurisdictional rate provisions to fund
19 the program. Finally, I examined the GTI website.

20
21 **Q. WOULD YOU PLEASE SUMMARIZE THE TESTIMONY OF MR.**
22 **EDELSTEIN IN THIS PROCEEDING?**

23
24 A. Mr. Edelstein begins his testimony with a brief description of GTI and a
25 discussion of the types of research it conducts or sponsors. He notes that about 25
26 percent of GTI's budget relates to "end-use R&D," that is, research and
27 development that seeks to improve the efficiency of the appliances and
28 technology used by end-use customers of the gas distribution industry. He
29 contends that private industry would not conduct such research.

30
31 Much of Mr. Edelstein's testimony consists of a description of 11 specific projects
32 that he proposes that Michigan gas distribution companies support. He notes that

1 several of them should improve the safety of the distribution system by enhancing
2 the detection of leaks.

3
4 Mr. Edelstein then lists a number of further areas of research that remain for GTI
5 to pursue. He notes that the previous funding system for GTI, which was a
6 surcharge on FERC-regulated gas pipelines, has ended and that a number of states
7 have substituted funding by local gas distribution companies. He proposes
8 several criteria for funding, and recommends that 1.74 cents per Mcf be
9 designated as the Michigan share of GTI's funding.

10
11 Mr. Edelstein concludes by citing to a study attached to his testimony that shows
12 an 8:1 benefit/cost relationship from GTI's research. He urges continued funding
13 in order to maintain the technological advances of the gas distribution industry.

14
15 **Q. WOULD YOU PLEASE DESCRIBE MR. EDELSTEIN'S TESTIMONY IN**
16 **THE ATMOS ENERGY RATE CASE IN GEORGIA?**

17
18 A. While not word-for-word identical, Mr. Edelstein's initial direct testimony in
19 Georgia is very similar to his Michigan testimony, so I will not repeat the
20 description of that testimony. However, in Georgia Mr. Edelstein also filed
21 testimony that sought to rebut the Adversary Staff's recommendation that Atmos's
22 GTI contribution be allowed but that it be treated as self-funding.

23
24 In this rebuttal testimony, Mr. Edelstein argued that although there is an 8:1
25 benefit/cost ratio for GTI's research, the benefits flow only over a five-year period
26 after the research projects are concluded. He noted that not all projects are
27 successful and there is no way to predict in advance which projects will succeed
28 and which will not. He further claimed that the benefit/cost ratio falls to 4:1 when
29 only distribution and end-use R&D are considered. Moreover, that ratio does not
30 include safety improvements, the benefits of which cannot be measured.

31
32 Mr. Edelstein went on to argue that many of the benefits consist of avoided costs,
33 not present costs that are reduced. These avoided costs include those related to

1 impending Federally-mandated safety and environmental programs. He
2 concluded by re-emphasizing the uncertain and delayed nature of the benefits
3 from individual R&D projects. He argued that it is unrealistic to expect any gas
4 distribution company to develop enough dollar savings from GTI's R&D to fund
5 that GTI's research programs on an on-going basis.

6
7 **Q. WOULD YOU PLEASE DESCRIBE THE FERC'S NOVEMBER 18, 2004**
8 **ORDER RELATING TO GTI?**

9
10 **A.** This order followed an application by GTI for continued funding of its research
11 through mandatory surcharges on FERC-regulated gas pipelines. FERC noted
12 that GTI's predecessor, GRI, had agreed to a stipulation back in 1998 that phased
13 out mandatory funding over a seven-year period, so that after December 31, 2004,
14 all funding would be voluntary. GTI argued that it was not GRI and therefore not
15 signatory to the agreement. FERC rejected this contention, noting the continued
16 ownership existing between GRI and GTI. It therefore found the 1998 stipulation
17 to remain applicable to GTI. In summarizing its position, FERC made the
18 following statement:

19
20 We do not agree that continued reliance on mandatory funding for
21 RD&D is necessary. If the industry and consumers demand a form
22 of cooperative effort in RD&D, they will be accommodated
23 without the mandatory funding GTI seeks here. Market-based
24 RD&D would better serve the consuming public than the acrimony
25 that has accompanied each and every GRI application since the
26 onset of the program for mandatory funding of cooperative RD&D
27 projects.¹

28
29 FERC went on to note:

30
31 Finally, if GTI is correct that RD&D will elicit only inadequate
32 financial support, then forcing the industry and its customers to
33 pay for GTI-managed RD&D has not been justified.²

34
35

¹ FERC Docket No. RP04-378-000, Order Issued November 18, 2004, ¶53.

² Id. ¶56.

1 **Q. HAVING REVIEWED THESE MATERIALS, WHAT IS YOUR**
2 **RECOMMENDATION TO THE COMMISSION?**

3
4 A. I recommend that the Michigan Public Service Commission follow the policy
5 adopted by the FERC, which is to make support of GTI purely voluntary on the
6 part of both the gas distribution companies and ratepayers. The reasons for this
7 recommendation are largely pragmatic. Ratepayers are not in a position to assess
8 the propriety and likely cost-effectiveness of GTI's research projects. Only the
9 utilities are. But the utilities need an incentive to make that assessment. If the
10 utilities are merely the conduit for money collected from ratepayers and
11 earmarked for GTI, then that incentive is missing. GTI responds to no one who
12 has an economic stake in the success of its efforts.

13
14 Mr. Edelstein is correct that it is overly simplistic to argue, as did the Georgia
15 Adversary Staff, that GTI's research is self-funding. That view implies that each
16 dollar of research generates more than a dollar's worth of return. The reality is as
17 Mr. Edelstein describes it: GTI conducts a research program consisting of some
18 projects that succeed, others that do not, but the aggregate effect of GTI's overall
19 research benefits the gas industry. Ultimately, both the gas distribution
20 companies and their customers benefit from the R&D activities of GTI.

21
22 The issue is who among the beneficiaries should pay for the programs. The
23 answer is that the financial support should come from the entities that are able to
24 exert influence, if not direct control, over GTI. These are the gas distribution
25 companies. For this reason, the gas distribution companies should be responsible
26 for supporting GTI with no guarantee that their support will be reimbursed by
27 ratepayers.

28
29 It is therefore incumbent on the gas utilities to make an independent analysis and
30 evaluation of each of GTI's R&D projects. If the objective of those projects is to
31 benefit ratepayers through improved end-use efficiency, then the utilities can
32 present the results of their evaluation to the Commission and seek reimbursement

1 for their financial support. In no case, however, should that reimbursement be
2 awarded without going through the filters of the gas distribution company's
3 evaluation and the Commission's approval in a contested rate case.

4

5 **Q. DOES THIS COMPLETE YOUR TESTIMONY?**

6

7 **A. Yes. It does.**

Experience**Snively King Majoros O'Connor
& Lee, Inc.
Washington, DC***President (1989 to Present)**Vice President (1970 - 1989)*

Mr. King, a founder of the firm and acknowledged authority on regulatory economics, brings over thirty years of experience in economic consulting to his direction of the firm's work in transportation, utility and telecommunications economics.

Mr. King has appeared as an expert witness on over 300 separate occasions before more than thirty state and nine U.S. and Canadian federal regulatory agencies, presenting testimony on rate base calculations, rate of return, rate design, costing methodology, depreciation market forecasting, and ratemaking principles. Mr. King has also testified before House and Senate Committees on energy and telecommunications legislation pending before the U.S. Congress.

In telecommunications, Mr. King has testified before the Federal Communications Commission on a number of policy issues, service authorization, competitive impacts, video dialtone, and prescription of interstate depreciation rates. Before state regulatory bodies, he has presented testimony in proceedings on intrastate rates, costs earnings and depreciation.

Mr. King has testified in electric, gas and water utility cases on virtually every aspect of regulation, including cost of capital, revenue requirements, depreciation, cost allocation and rate design. Mr. King is one of the nation's leading authorities on utility depreciation practices, having testified on this subject in several dozen cases before state regulatory bodies.

In addition to his appearances as a witness in judicial and administrative proceedings, Mr. King has negotiated settlements among private parties and between private parties and regulatory offices. Mr. King also has directed depreciation studies, investment cost benefit analyses, demand forecasts, cost allocation studies and antitrust damage calculations. Mr. King directed analyses of the prices of services under Federal Government's FTS2000 long distance system.

In Canada, Mr. King designed and directed an extended inquiry into the principles and procedures for regulating the telecommunication carriers subject to the jurisdiction of the Canadian Transport Commission. He also was the principal investigator in the Canadian Transport Commission's comprehensive review of rail costing procedures.

**EBS Management Consultants, Inc.,
Washington, DC***Director, Economic Development Department
(1968-1970)*

Mr. King organized and directed a five-person staff of economists performing research, evaluation, and planning relating to economic development of depressed areas and communities within the U.S. Most of this work was on behalf of federal, state, and municipal agencies responsible for community or regional economic development.

Principal Consultant (1966-1968)

Mr. King conducted research on a broad range of economic topics, including transportation, regional economic development, communications, and physical distribution.

**W.B. Saunders & Company, Inc.,
Washington, DC***Staff Economist (1962-1966)*

For this economic consulting firm, which later merged with EBS Management Consultants, Inc., Mr. King engaged in numerous research efforts relating primarily to economic development and transportation.

**U.S. Bureau of the Budget, Office of
Statistical Standards***Analytical Statistician (1961-1962)*

Mr. King was responsible for the review of all federal statistical and data-gathering programs relating to transportation.

Education*Washington & Lee University, B.A. in Economics**The George Washington University, M.A. in
Government Economic Policy*

CHARLES W. KING
Snavely King Majoros O'Connor & Lee, Inc.
1220 L Street, N.W., Suite 410
Washington, D.C. 20005
(202) 371-1111

Appearances before State Regulatory Agencies

State	Electric, Gas, Water Utility Cases			Date of Cross-Examination
	Client	Case		
		Case Number	Utility	
AK	Exxon USA	P-89-1,2	Trans Alaska Pipeline System	October 18, 1990
AZ	Arizona Corporation Commission Arizona Retailers Association	U-1345-I U-1345-II	Arizona Public Service Co. Arizona Public Service Co.	December 16, 1980 January 15, 1981
CA	California Retailers Association California Retailers Association California Retailers Association California Retailers & California Manufacturers California Retailers Association	57666 57602 59351 59351 61138	Pacific Gas & Electric Co. Southern California Edison Pacific Gas & Electric Co. Southern California Edison Southern California Edison	March 6, 1978 April 25, 1978 June 12, 1981 May 20, 1982 May 28, 1982
CO	U. S. Department of Defense J.C. Penny Company U.S. Department of Defense U. S. Department of Defense U.S. Department of Defense U.S. Department of Defense U.S. Department of Defense U.S. Department of Defense	I&S 1100 5693 I&S 1339 I&S 1540 C. Council C. Council C. Council C. Council	Colorado Springs (Elec) All Electric Utilities Colorado Springs DPU (Gas) Colorado Springs DPU (Gas) Colorado Springs DPU (Gas) Colorado Springs DPU (Elec) Colorado Springs DPU (Elec) Colorado Springs DPU (Elec)	June 14, 1977 March 8, 1978 October 18, 1979 February 9, 1982 September 30, 1984 June 6, 1985 May 19, 1986 June 30, 1987
CT	Retailers Merchants Association Division of Consumer Counsel Public Utilities Control Auto Division of Consumer Counsel Division of Consumer Counsel Division of Consumer Counsel Division of Consumer Counsel Coalition of Hotels, Alloys & Retailers Coalition of Hotels, Alloys & Retailers	72-0204 76-0604,5 78-0303 80-0403,4 81-0413 81-0602,4 82-0701 85-10-22 87-07-01	Various Electric Utilities CL&P and HELCO Bridgeport Hydraulic Co. CL&P and HELCO United Illuminating Company CL&P and HELCO CL&P CL&P CL&P	July 22, 1976 November 10, 1977 (none) August 11, 1980 July 20, 1981 October 5, 1981 September 28, 1982 (none) April 25, 1988

State	Electric, Gas, Water Utility Cases			Date of Cross-Examination
	Client	Case		
		Case Number	Utility	
DC	D.C. People's Counsel	685	Potomac Electric Power Company	March 6, 1978
	D.C. People's Counsel	715	Potomac Electric Power Company	(none)
	D.C. People's Counsel	725	Potomac Electric Power Company	April 4, 1980
	D.C. People's Counsel	737	Potomac Electric Power Company	January 1, 1981
	Washington Metro Area Transit Authority	748	Potomac Electric Power Company	June 26, 1981
	Washington Metro Area Transit Authority	758	Potomac Electric Power Company	December 15, 1981
	D.C. People's Counsel	785	Potomac Electric Power Company	September 21, 1982
	Washington Metro Area Transit Authority	759	Potomac Electric Power Company	March 29, 1984
	D.C. People's Counsel	685 Remand	Potomac Electric Power Company	June 10, 1985
	D.C. People's Counsel	905	Potomac Electric Power Company	August 20, 1991
	D.C. People's Counsel	912	Potomac Electric Power Company	May 7, 1992
	D.C. People's Counsel	834, III	Potomac Electric Power Company	May 22, 1992
	D.C. People's Counsel	917	Potomac Electric Power Company	September 24, 1992
	D.C. People's Counsel	922	Washington Gas Light Company	June 15, 1993
	D.C. People's Counsel	929	Potomac Electric Power Company	December 16, 1993
	D.C. People's Counsel	934	Washington Gas Light Company	Filed April 22, 1994
	D.C. People's Counsel	939	Potomac Electric Power Company	March 16, 1995
	D.C. People's Counsel	917	Washington Gas Light Company	April 16, 1995
	D.C. People's Counsel	951	Potomac Electric Power Company	February 20, 1997
	D.C. People's Counsel	945	Potomac Electric Power Company	September 29, 1999
	D.C. People's Counsel	847	Washington Gas Light Company	June 27, 2001
	D.C. People's Counsel	989	Washington Gas Light Company	May 22, 2002
	D.C. People's Counsel	1016	Washington Gas Light Company	September 23, 2003
DE	Delaware PSC Staff	94-164	Artesian Water Company	Filed March 10, 1995
	Delaware PSC Staff	94-149	Wilmington Suburban Water Company	March 10, 1995
	Delaware PSC Staff	04-152	Tidewater Utilities Company	Filed July 26, 2004
FL	Florida Retail Federation	790593-EU	All Electric Utilities	March 5, 1981
	Florida Retail Federation	810002-EU	Florida Power and Light Company	July 23, 1981
	Florida Retail Federation	820097-EU	Florida Power and Light Company	September 22, 1982
	Florida Retail Federation	820097-EU	Florida Power and Light Company	April 11, 1983
	Florida Retail Federation	830012-EU	Tampa Electric Company	August 19, 1983
	Florida Retail Federation	830465-EI	Florida Power and Light Company	April 19, 1984
	Florida Retail Federation	830465-EI	Tampa Electric Company	(none)

CHARLES W. KING
Appearances before State Regulatory Agencies

State	Client	Electric, Gas, Water Utility Cases		Date of Cross-Examination
		Case Number	Utility	
MA	Coalition of Municipalities	20279	Western Massachusetts Electric	March 19, 1980
	Coalition of Municipalities	557/558	Western Massachusetts Electric	May 14, 1981
	Coalition of Municipalities	957	Western Massachusetts Electric	March 9, 1982
	Coalition of Municipalities	1300	Western Massachusetts Electric	January 1, 1983
MD	Coalition of Municipalities	85-270	Western Massachusetts Electric	March 26, 1986
	Maryland People's Counsel	6977	Washington Gas & Light Company	September 17, 1976
	Maryland People's Counsel	6814	Potomac Electric Power Company	September 1, 1977
	Maryland People's Counsel	6807	All Electric Utilities	(none)
	Maryland People's Counsel	6882	Baltimore Gas & Electric Company	September 28, 1976
	Maryland People's Counsel	6985	Baltimore Gas & Electric Company	December 20, 1976
	Maryland People's Counsel	7070	Baltimore Gas & Electric Company	April 18, 1978
	Maryland People's Counsel	7149	Potomac Electric Power Company	January 17, 1979
	Maryland People's Counsel	7163	All Electric Utilities	October 23, 1978
	Maryland People's Counsel	7236	Delmarva Power & Light Company	June 20, 1980
	Retail Merchants of Baltimore	7397	Baltimore Gas & Electric Company	September 8, 1980
	Maryland People's Counsel	7427	Delmarva Power & Light Company	December 2, 1981
	Maryland People's Counsel	7574	Baltimore Gas & Electric Company	February 18, 1982
	Maryland People's Counsel	7597	Potomac Electric Power Company	April 20, 1982
	Organization of Consumer Justice	7604	Potomac Electric Power Company	October 19, 1982
	Maryland People's Counsel	7588	Baltimore Gas & Electric Company	November 22, 1982
	Maryland People's Counsel	7663	Potomac Electric Power Company	April 12, 1983
	Retail Merchants of Baltimore	7685	Baltimore Gas & Electric Company	December 9, 1985
	Genstar Stone Products, et al.	7878	Potomac Electric Power Company	June 28/July 1986
	Industrial Intervenor	7878	Potomac Electric Power Company	March 4, 1987
MI	Maryland People's Counsel	7983	Baltimore Gas & Electric Company	January 8, 2003
	Giant Foods, Inc.	8855	Baltimore Gas & Electric Company	September 29, 2005
	Maryland People's Counsel	8036	Baltimore Gas & Electric Company	
	General Services Administration	U-10102	Detroit Edison Company	March 22, 1993
	Michigan Attorney General	U-11722	Detroit Edison Company	November 6, 1998
	Michigan Attorney General	U-11772	Consumers Energy/Detroit Edison	November 16, 1998
	Michigan Attorney General	U-11495	Detroit Edison Company	December 8, 1999
	Michigan Attorney General	U-11956	Consumer Energy/Detroit Edison	December 15, 1999
	Michigan Attorney General	U-12505	Consumers Energy Company	September 7, 2000
	Michigan Attorney General	U-12478	Detroit Edison Company	October 5, 2000
	Michigan Attorney General	U-12639	Consumers Energy/Detroit Edison	July 18, 2001
	Michigan Attorney General	U-13000	Consumers Energy Company	January 29, 2002
	Michigan Attorney General	U-13380	Consumers Energy Company	September 9, 2002
	Michigan Attorney General	U-13715	Consumers Energy Company	April 24, 2003
	Michigan Attorney General	U-13808	Detroit Edison Company	Dec 12, 2003; Jan 30, Mar 5, 04

CHARLES W. KING
Appearances before State Regulatory Agencies

State	Electric, Gas, Water Utility Cases				Date of Cross-Examination
	Client	Case		Utility	
		Case Number			
MI (Cont'd)	Michigan Attorney General	U-12899	Consumers Energy Company	March 10, 2004	
	Michigan Attorney General	U-13898.9	Michigan Consolidated Gas Co.	August 23, 2004	
	Michigan Attorney General	U-14201	Detroit Edison Company	Filed December 5, 2004*	
	Michigan Attorney General	U-14274	Consumers Energy Company	Filed February 15, 2005	
	Michigan Attorney General	U-14148	Consumers Energy Company	Filed March 2, 25, 2005	
	Michigan Attorney General	U-14399	Detroit Edison Company	July 29, 2005	
	Michigan Attorney General	U-14428	Detroit Edison Company	September 7, 2005	
	Michigan Attorney General	U-14292	All Michigan Utilities	September 27, 2005	
	Michigan Attorney General	U-13808-R	Detroit Edison Company	November 7, 2005	
	Michigan Attorney General	U-14547	Consumers Energy Company	November 14, 2005	
MN	Minnesota Retail Federation	EO026R-77-611	Northern States Power	1979	
MO	Missouri Retailers Association	EO-78-161	Kansas City Power & Light Company	February 19, 1981	
NC	North Carolina Merchants Association	E-100	All Electric Utilities	December 18, 1975	
ND	North Dakota Public Service Commission	PU-400-00-521	Xcel Energy, Inc.	April 20, 2001	
	North Dakota Public Service Commission	PU-399-01-786	Montana-Dakota Utilities (Electric)	February 25, 2002	
	North Dakota Public Service Commission	PU-399-02-183	Montana-Dakota Utilities (Gas)	October 7, 2002	
	North Dakota Public Service Commission	PU-399-02-183	Montana-Dakota Utilities (Gas Depr.)	Filed April 7, 2003	
	North Dakota Public Service Commission	PU-399-03-286	Montana-Dakota Utilities (Electric)	Filed October 15, 2003	
	North Dakota Public Service Commission	PU-04-87	Montant-Dakota Utilities (Gas)	Filed July 6, 2004	
NH	Business & Industry Association of N.H.	79-187-II	Public Service of N.H.	February 6, 1981	
	Business & Industry Association of N.H.	80-260	Public Service of N.H.	February 5, 1981	
	Business & Industry Association of N.H.	82-333	Public Service of N.H.	November 2, 1983	
NJ	N.J. Retail Merchants Association	803-151	All New Jersey Utilities	March 31, 1981	
	Department of Public Advocate	815-459	N.J. Natural Gas Company	(none)	
	Resorts International Hotel, Inc.	8011-827	Atlantic City Sewerage Co.	(none)	
	Dept. of Public Advocate	822-116	Atlantic City Electric Co.	August 11, 1982	
	Dept. of Public Advocate	355-87	Elizabethtown Gas	June 9, 1987	
	Dover Township Fire Chiefs	88-080967	Tom's River Water Company	February 22, 1989	

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Appearances before State Regulatory Agencies

State	Electric, Gas, Water Utility Cases				Date of Cross-Examination
	Client	Case		Utility	
		Case Number			
NY	N.Y. Council of Retail Merchants Metropolitan N.Y. Retail Council Metropolitan N.Y. Retail Council N.Y. Metro. Transit Authority	26806 27029 27136 27353	All Electric Utilities Consolidated Edison Company Long Island Lighting Company Consolidated Edison Company	February 3, 1976 (none) July 1, 1977 September 5, 1980	
OH	Ohio Council of Retail Association Ohio Council of Retail Association	88-170-EL 83-1529-EL	Cleveland Elec. Illuminating Cincinnati Gas & Electric	(none) February 15, 1992	
PA	Pennsylvania Retail Association Southeastern Pa. Transp. Authority Eastern Penn Energy Users Group Eastern Penn Energy Association Penn Business Utility User Group Pennsylvania Office of Consumer Advocate	76-PRMD-7 R-811626 R-822169 R-842651 R-850152 R-00016339	All Electric Utilities Philadelphia Electric Company Penn. Power & Light Company Penn. Power & Light Company Philadelphia Electric Company Pennsylvania-American Water Co.	September 7, 1977 December 11, 1981 March/April 1983 December 3, 1984 February 19, 1986 September 19, 2001	
TX	Houston Retailers Association Houston Retailers Association Cities for Fair Utility Rates	5779 6765 8425/8431	Houston Lighting Company Houston Lighting Company Houston Lighting Company	October 19, 1984 September 25, 1986 April 25, 1989	
UT	Div. Of Public Utilities Dept of Commerce	98-2035-33	Pacific Corp	Filed August 16, Sept 22, 1999	
VA	Consumer Congress of Virginia Consumer Congress of Virginia Va. Business Committee on Energy Virginia Pipe Trades Council	19426 19960 PUE 7900012 PUE 8900051	Virginia Electric Power Company Virginia Electric Power Company Virginia Electric Power Company Old Dominion Electric Corp. &	July 1, 1975 September 19, 1978 February 25, 1981 October 31, 1989	
WI	Wisconsin Merchants Federation	6630-ER-2	Wisconsin Electric Power Company	May 15, 1978	

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Appearances before State Regulatory Agencies

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State	Telecommunications Cases				Date of Cross-Examination
	Client	Case		Utility	
		Case Number			
AL	U. S. Department of Defense	24472	All Telephone Companies		June 14, 1995
AK	GCI Communications, Inc. GCI Communications, Inc.	U-97-82,U-97-143 U-05-46	Alaska Communications Systems Matanuska Telephone Association		Filed Feb 25, April 5, 2004 October 28, 2005
AZ	Arizona Burglar & Fire Alarm Association Federal Executive Agencies U.S. Department of Defense	9981-E- 1051-80-64 E-1051-88-146 T-01051B-99-0105	Mountain State Telephone	(none)	(none) Filed July 26, Sept 8, 2000
			Mountain State Telephone US WEST Communications	(none)	
CA	Western Burglar & Fire Alarm Association Western Burglar & Fire Alarm Association Western Burglar & Fire Alarm Association Western Burglar & Fire Alarm Association Western Burglar & Fire Alarm Association Western Burglar & Fire Alarm Association Western Burglar & Fire Alarm Association Western Burglar & Fire Alarm Association California Cellular Resellers Federal Executive Agencies California Cellular Resellers Cellular Services, Inc. Federal Executive Agencies	59849 5984cont. A83-01-22 A83-02-02 A82-11-07 A85-01-034 A87-01-02 A88-07-17019 A.88-11-1040 1.87-11-033 1.88-11-040 1.88-11-040 A92-05-004	Pacific Telephone & Telegraph	March 25, 1981	March 25, 1981 June 23, 1982 June 29, 1983 January 17, 1984 Jan. 18, Oct. 31, Nov 28, 1984 June 4, 1985, October 2, 1986 October 22, 1987 January 23, 1989 August 11, 1989 March 6-7, 1991 August 19, 1991 October 3, 1991 June 9, 1993
			Pacific Telephone & Telegraph	June 23, 1982	
			Pacific Telephone & Telegraph	June 29, 1983	
			General Telephone of California	January 17, 1984	
			Pacific Telephone & Telegraph	Jan. 18, Oct. 31, Nov 28, 1984	
			Pacific Telephone & Telegraph	June 4, 1985, October 2, 1986	
			General Telephone of California	October 22, 1987	
			Pac. Bell Tel. & GTE of CA.	January 23, 1989	
			All Cellular Carriers	August 11, 1989	
			All Telephone Companies	March 6-7, 1991	
			All Cellular Carriers	August 19, 1991	
			All Cellular Carriers	October 3, 1991	
			Pacific Telephone & Telegraph	June 9, 1993	
CO	U.S. Department of Defense U.S. Department of Defense U.S. Department of Defense U.S. Department of Defense Colorado Municipal League U.S. Department of Defense U.S. Department of Defense U.S. Department of Defense U.S. Department of Defense U.S. Department of Defense U.S. Department of Defense AT&T	I&S 717 I&S 1700 Appl. I&S 1766 Appl 36883 I&S 891-082T 905-544T 90A-665T 92M-039T 92S-229T 90A-665T 96S-331T	Mountain Bell Telephone Company	1972	1972 (none) September 18, 1986 November 28, 1988 December 13, 1988 February 21, 1990 July 17, 1991 October 23, 1991 February 24-24, 1992 July 30-31, 1992 November 6, 1986 April 17, 1997
			Mountain Bell Telephone Company	(none)	
			Mountain Bell Telephone Company	September 18, 1986	
			Mountain Bell Telephone Company	November 28, 1988	
			Mountain Bell Telephone Company	December 13, 1988	
			U.S. West Communications	February 21, 1990	
			U.S. West Communications	July 17, 1991	
			U.S. West Communications	October 23, 1991	
			U.S. West Communications	February 24-24, 1992	
			U.S. West Communications	July 30-31, 1992	
			U.S. West Communications	November 6, 1986	
			U.S. West Communications	April 17, 1997	

State	Telecommunications Cases			Date of Cross-Examination
	Client	Case		
		Case Number	Utility	
CT	Connecticut Consumer Counsel CT Cellular Resellers Assn. CT Cellular Resellers Coalition AT&T Connecticut Consumer Counsel Connecticut Consumer Counsel	770526 89-12-05 94-03-27 AT&T/SNET Arbitration 96-04-07 00-07-17	Southern New England Telephone Co. Southern New England Telephone Co. Springwich Cellular/Bell Atlantic Southern New England Telephone Co. Southern New England Telephone Co. Southern New England Telephone Co.	November 10, 1977 (none) May 16, June, 1994 Filed October 28, 1996 February 10, 1998 December 5, 2000
DC	D.C. People's Counsel D.C. People's Counsel General Services Administration General Services Administration General Services Administration General Services Administration	729 798 827 854 850 926	Chesapeake & Potomac Tel. Co. Chesapeake & Potomac Tel. Co. Chesapeake & Potomac Tel. Co. Chesapeake & Potomac Tel. Co. Chesapeake & Potomac Tel. Co. Chesapeake & Potomac Tel. Co.	May 13, 1980 July 18, 1983 May 7, 1985 April 16, 1987 October 7, 1991 October 7, 1993
DE	Public Service Commission Federal Executive Agencies Public Service Commission	Depr.Repre 86-20 Depr.Repre	Diamond State Telephone Co. Diamond State Telephone Co. Diamond State Telephone Co.	April 1, 1985 July 31, 1987 March 8, 1988
FL	GTE Sprint Communications Company Office of Public Counsel Federal Executive Agencies Federal Executive Agencies Federal Executive Agencies	720536-TP Depr.Repre 880069-TL 880069-TL 880069-TL	All Telephone Companies Southern Bell Southern Bell Southern Bell Southern Bell	September 12, 1983 July 30, 1988 July 21, 1988 November 30, 1990 February 11, 1992
GA	Georgia Attorney General Federal Executive Agencies Federal Executive Agencies Georgia Public Service Commission	3893-U 3905-U 3987-U 4018-U	Southern Bell Telephone Co. Southern Bell Telephone Co. Southern Bell Telephone Co. Southern Bell Telephone Co.	January 8, 1990 June 12, 1990 February 13, 1992 Jan 14, Feb 10, 1993
HI	Hawaii Public Utility Commission Four Hawaii Counties Department of Defense Department of Defense Department of Defense Department of Defense	1871 4588 7579 94-0093 7702 94-0298 7720	Hawaiian Telephone Company Hawaiian Telephone Company Hawaiian Telephone Company Oceanic Communications All Communications Carriers GTE Hawaiian Telephone Company Verizon-Hawaii	July 8, 1971 December 15, 1983 April 26, 1994 March 13, 1995 June 2, 1995 May 7, 1996 November 15, 2000

CHARLES W. KING
Appearances before State Regulatory Agencies

State	Telecommunications Cases				Date of Cross-Examination
	Client	Case		Utility	
		Case Number			
ID	U.S. Department of Energy U.S. Department of Energy	U-1000-63 U-1000-70	Mountain Bell Telephone Co. Mountain Bell Telephone Co.	May 16, 1983 March 6, 1984	
IL	Illinois Aalarm Companies Attorney General of Illinois GTE Sprint Communications Co. Federal Executive Agencies	79-0143 81-0478 83-0142 89-0033	Illinois Bell Telephone Illinois Bell Telephone All Telephone Companies Illinois Bell Telephone	September 26, 1979 December 28, 1981 August 4, 1983 June 12, 1989	
KS	State Corporation Commission Federal Executive Agencies Federal Executive Agencies	Depr. Repr. 166.856-U 190, 492	Southwestern Bell Southwestern Bell All Telephone Companies	May 12-14, 1986 November 7, 1989 November 4, 1994	
KY	Kentucky Cable Telecommunications Assn. Kentucky Cable Telecommunications Assn.	2000-414 2000-39	Blue Grass Energy Cooperative Cumberland Valley Electric, Inc.	January 11, 2001 January 11, 2001	
MD	Maryland People's Counsel Maryland People's Counsel Maryland People's Counsel Maryland People's Counsel Federal Executive Agencies Federal Executive Agencies Federal Executive Agencies	6813 6881 7025 7467 7851 8106 8274	C&P Telephone Company C&P Telephone Company C&P Telephone Company C&P Telephone Company C&P Telephone Company C&P Telephone Company C&P Telephone Company	1975 December 17, 1975 March 15, 1975 October 20, 1981 March 20, 1985 May 9, 1988 August 2, 1990	
MI	Michigan Attorney General Michigan Attorney General	U-8911 U-9553	Michigan Bell Telephone Co. AT&T Communications/MCI	November 7, 1988 December 4, 1990	
MN	GTE Sprint Communications Co. U.S. Department of Defense	83-102-HC 87-021-BC	All Telephone Companies Northwest Bell Telephone Co.	August 5, 1983 (none)	

CHARLES W. KING
Appearances before State Regulatory Agencies

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State	Telecommunications Cases				Date of Cross-Examination
	Client	Case		Utility	
		Case Number			
MO	GTE Sprint Communications Co. Federal Executive Agencies Federal Executive Agencies	TR83-253 TC-89-14 TO-89-56	Southwestern Bell Tel. Co. Southwestern Bell Tel. Co. Southwestern Bell Tel. Co.	September 5, 1983 (none) November 7, 1990	
MS	Federal Executive Agencies	U-5453	South Central Bell Tel. Co.	May 15, 1990	
NJ	Department of Public Advocate Department of Public Advocate Department of Public Advocate Department of Public Advocate Department of Public Advocate	Depr.Repr. 815-458 Depr.Repr. Depr.Repr. T092030358	N.J. Bell Telephone Company N.J. Bell Telephone Company N.J. Bell Telephone Company N.J. Bell Telephone Company N.J. Bell Telephone Company	Mar-79 October 15, 1981 March 1, 1982 February 1, 1985 September 30, 1992	
NM	New Mexico Corporation Commission New Mexico Corporation Commission	1032 86-151-TC	Mountain Bell Telephone Co. General Telephone of Southwest	November 14, 1983 February 5, 1987	
NV	Prime Cable of Las Vegas Prime Cable of Las Vegas	95-8034/8035 96-9035	Central Telephone - NV Sprint/Centel, Nevada Bell	Filed November 22, 1995 June 2, 1997	
NY	Holmes Protection, Inc. Holmes Protection, Inc. 5 Alarm Companies GTE Sprint Communications Co.	27350 27469 27710 28425	New York Telephone Company New York Telephone Company New York Telephone Company All Telephone Companies	October 17, 1978 May 17, 1979 July 24, 1980 July 8, 1983	
PA	City of Philadelphia	R-832316	Pennsylvania Bell Telephone	September 20, 1983	
SC	Office of Consumer Advocate Office of Consumer Advocate Office of Consumer Advocate Office of Consumer Advocate Office of Consumer Advocate	Depr.Repr. 86-511-C 86-541-C Depr.Repr. 89-180-C	Southern Bell Southern Bell General Telephone of South Southern Bell ALLTEL of South Carolina	July 1, 1986 December 11, 1986 April 8, 1987 July 10, 1989 September 26, 1989	

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Appearances before State Regulatory Agencies

State	Telecommunications Cases				Date of Cross-Examination
	Client	Case		Utility	
		Case Number			
TX	U.S. Department of Defense	8585/8218	Southwestern Bell Telephone Co.	(none)	
VA	U.S. Dept. Of Defense, GSA, et Federal Executive Agencies	19696 PUC 890014	C&P Telephone Company All Telephone Companies	October 6, 1976 February 13, 1989	
VI	V.I. Department of Commerce V.I. Public Service Commission	205 341	Virgin Islands Telephone Co. Virgin Islands Telephone Co.	April 29, 1980 March 20, 1991	
WA	U.S. Department of Defense U.S. Department of Defense U.S. Department of Defense U.S. Department of Defense WA Attorney General/TRACER U.S. Department of Defense U.S. Department of Defense WA Attorney General/TRACER WA Attorney General/TRACER U.S. Department of Defense WA Attorney General/WeBTEC/AARP WA Attorney General WA Attorney General	U-72-39 U-87-796-T U-88-20524 U-89-2698-F UT-940641 UT-941464 UT-951425 UT-961632 UT-021120 UT-040788 UT-040520 UT-050814	Pacific Northwest Bell Pacific Northwest Bell Pacific Northwest Bell US West Communications US West Communications US West Communications US West Communications GTE Northwest, Inc Qwest Communications Verizon Northwest, Inc. Verizon Northwest, Inc. Verizon - MCI Merger	1973 December 20, 1983 November 8, 1988 November 28, 1989 Filed October 14, 1994 June 22, 1995 January 22, 1996 Filed June 23, 1997 July 29, 1997 May 22, 2003 August 12, 2004 February 2, 2005 November 2, 2005	
WI	GTE Sprint Wisconsin Consumers Utility Board Wisconsin Consumers Utility Board	6720-TR-38 2055-TR-102 5846-TR-102	All Telephone Companies CenturyTel of Central Wisconsin Telephone USA, LCC	October 20, 1983 June 26, 2002 June 26, 2002	

Federal Communications Commission			
Client	Docket	Subject	Date of Cross-Examination
Department of Defense Airline Parties Airline Parties National Data Corporation Press Wire Services Aeronautical Radio Department of Defense State of Hawaii International Record Carriers ITT World Communications Aeronautical Radio MCI Ind. Data Com. Mfg. Assn. Tynnet, Inc. Adelphia Jones Intercable, et. al. Adelphia Jones Intercable, et. al. Adelphia Jones Intercable, et. al.	16020 16258 18128 19989 19919 20814 20690 21263 CC78-97 CC84-633 CC78-72 CC84-800 CC85-26 ENF84-22 Bell Atlantic Bell Atlantic Bell Atlantic	Consat Rate of Return Bell System Rates TELPAC WATS Private Line Rates Private Line Rates 1,544 Mbps Service Interstate Separation Telex/TWX Rates Rate of Return Access Line Charges Rate of Return AT&T Accounting Plan Packet Switching Costs Video Dialtone Video Dialtone Video Dialtone	1973 July 22, 1968 3/22, 10/15 1971, Feb. 22, 1972 (none) (none) October 5, 1978 January 30, 1979 February 7, 1979 March 6, 1980 (none) (none) (none) (none) (none) Filed 7/29/94 Filed 8/23/94 Filed 2/21/95
Nuclear Regulatory Commission			
Fauquier League for Environment Protection	50-328 50-329	Va. Electric Power Co.	1976
Postal Rate Commission			
Association of Third Class Mail Users Dow Jones & Company Dow Jones & Company Dow Jones & Company Dow Jones & Company Dow Jones & Company Dow Jones & Company Dow Jones & Company Dow Jones & Company Dow Jones & Company Dow Jones & Company Dow Jones & Company Dow Jones & Company	R71-1 R72-1 R74-1 MC76-2 MC79-3 R80-1 C82-1 R84-1 R87-1 R90-1 MC91-1 MC91-3	Rates Rates Rates Rate Structure Rate Structure Rates Rate Structure Postal Costs Rate Structure Costs Rate Structure Costs Pre-barcoding Discounts Palletization Discounts	1970 1972 September 13, 1974 January 6, 1979 September 12, 1979 November 25, 1980 (none) June 14, 1984 November 2, 1987 Sept 12, Oct 10, 1990 November 19, 1991 March 2, 1992

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Appearances before Federal Regulatory Agencies

Client	Docket	Subject	Date of Cross-Examination
U.S. Congress			
National Retail Merchants Association	House/Senate Hearings	Electric Rate Reform Legislation	1976, 1977 & 1979
National Wireless Resellers Association	House Commerce Committee	Interconnection & Resale of Wireless Services	October 12, 1995
Federal Maritime Commission			
State of Hawaii	71-18	Ocean Shipping Rates	October-71
Foss Alaska Line	79-54	Barge Rate Increase	July 1979
Palmetto Shipping and Stevedoring	85-20	Vessel Charge Liability	October 27, 1986
Interstate Commerce Commission			
Western Coal Traffic League	Ex Parte 349	R.R. Rate Increase	May-76
Western Coal Traffic League	Ex Parte 357	R.R. Rate Increase	Oct-78
Western Coal Traffic League	Ex Parte 375 (Sub 1)	R.R. Rate Increase	June 1, 1980
Arkansas Power & Light Co.	37276	Cost of Capital	(none)
Central Illinois Light Co.	37450	Cost of Capital	March 10, 1981
Western Coal Traffic League	Ex Parte 347	Costing Methods	(none)
Civil Aeronautics Board			
Thomas Cook, Inc.	36595	Air Fare Deregulation	(none)
Copyright Royalty Tribunal			
Public Broadcasting Service	88-2-86CD	Television Valuation	(none)
Federal Energy Regulatory Commission			
Exxon USA	OR88-2-000	Pipeline Quality Bank	October 18, 1980
Canadian Transport Commission			
Rail Costing Inquiry, 1967-1969 Telecommunications Costing Inquiry, 1972-1975			
Surface Transportation Board			
Williams Energy Services, Inc.	Ex Parte 582, Sub 1	Rail Merger Guidelines	April 5, 2001

1 MR. MOODY: I would submit him for cross.

2 JUDGE CUMMINS: Very well. Mr. Nelson,
3 why don't we start with GTI. Any questions for this
4 witness?

5 MR. NELSON: Yes, your Honor.

6 CROSS-EXAMINATION

7 BY MR. NELSON:

8 Q Mr. King, can you refer to page 6 of your testimony,
9 starting on line 4.

10 A Yes.

11 Q You recommend there that the commission adopt FERC's
12 policy that GTI funding be purely voluntary on the part
13 of both gas distribution companies and ratepayers?

14 A Yes.

15 Q Are you suggesting that each ratepayer decide for
16 themselves what GTI project gets funded?

17 A No. I think the gas distribution companies would
18 voluntarily support GTI, but in doing so, they would have
19 to justify in each rate case their contribution to GTI as
20 an element of expense just like they would have to
21 justify every other element of expense. The burden would
22 be on the LDC to demonstrate that this support is
23 beneficial to ratepayers.

24 Q So you would agree with staff Witness Devon's testimony
25 in this regard, that the amounts should be recorded like

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1 any other operating expense amount?

2 A That's right.

3 Q And they should be recorded in Account 930.2 of the
4 Uniform System of Accounts?

5 A I never got to that level of detail, but sounds O.K. to
6 me.

7 Q Also on page 6, line 11, you indicate that utilities need
8 some incentive to assess the cost effectiveness of GTI
9 projects?

10 A Yes, because they need to be -- they need to have -- they
11 should be required to defend their GTI contributions. If
12 you just have a surcharge that is a conduit to GTI with
13 no requirement, no burden on the utility to make that
14 defense on a project-by-project basis, then there is no
15 incentive to look closely at those projects. The
16 utilities must be held accountable for every penny they
17 spend on GTI.

18 Q Well, then, on line 26 on that same page, you say that
19 gas distribution companies should be responsible for
20 supporting GTI with no guarantee that their support will
21 be reimbursed by ratepayers; is that correct?

22 A Well, in the same sense that there's no guarantee that an
23 operations and maintenance expense will be reimbursed by
24 ratepayers. They have to -- the burden is always on the
25 utility in a rate case to justify any item of expense or

1 cost that it wants to pass through to the ratepayers.

2 Q Would you agree, then, that a utility without some
3 assurance of cost recovery would have no incentive to
4 even seek recovery of these costs?

5 A Well, one supposes that the utility, in order to ask for
6 GTI contribution, would have some confidence that it can
7 make the case that the GTI contribution is cost
8 justified, and that's exactly the incentive we want.

9 MR. NELSON: No further questions.

10 JUDGE CUMMINS: Very well. Anything from
11 ABATE?

12 MR. STRONG: Just one question, your
13 Honor.

14 CROSS-EXAMINATION

15 BY MR. STRONG:

16 Q Would an end-use gas transportation customer be
17 considered a shipper by FERC?

18 A You know, again, I take Mr. Edelstein's response. This
19 is something I'm not sure I'm qualified to answer.

20 MR. STRONG: Nothing further.

21 JUDGE CUMMINS: Very well. Actually, why
22 don't we start along the back. Ms. Wellman, anything?

23 MS. WELLMAN: No, your Honor.

24 JUDGE CUMMINS: Mr. Middleton?

25 MR. MIDDLETON: I have no questions, your

1 Honor.

2 JUDGE CUMMINS: Any questions from

3 Consumers?

4 MS. MORRIS: No, your Honor.

5 JUDGE CUMMINS: Very well. That brings
6 us around to the staff. Any questions of this witness?

7 MS. BARONE: No, your Honor.

8 JUDGE CUMMINS: Any need for redirect?

9 MR. MOODY: Your Honor, I don't know. If
10 we can take five minutes. No, it looks like we don't
11 need it.

12 JUDGE CUMMINS: Very well.

13 MR. MOODY: Just checking.

14 JUDGE CUMMINS: That being the case,
15 you're excused, Mr. King.

16 THE WITNESS: Thank you.

17 (The witness was excused.)

18 JUDGE CUMMINS: Ms. Barone, did you
19 already get the exhibit marked, the official exhibit
20 marked at this point?

21 MS. BARONE: Yes, I did.

22 JUDGE CUMMINS: Do you need a second, or
23 are you ready to proceed?

24 MS. BARONE: We're ready to proceed.

25 JUDGE CUMMINS: Very well.

1 (Document marked for identification by the Court
2 Reporter as Exhibit No. S-1.)

3 S U S A N C R I M M I N S D E V O N

4 was called as a witness on behalf of Michigan Public
5 Service Commission Staff and, having been duly sworn to
6 testify the truth, was examined and testified as follows:

7 DIRECT EXAMINATION

8 BY MS. BARONE:

9 Q Would you please state your name and business address.

10 A Yes. My name is Susan Crimmins Devon, and my business
11 address is 6545 Mercantile Way, Lansing, Michigan.

12 Q And where are you employed and what capacity?

13 A I'm employed by the Michigan Public Service Commission as
14 director of the regulated energy division.

15 Q And did you cause to be prefiled in this case direct
16 testimony consisting of a cover sheet and eleven pages?

17 A Yes, I did.

18 Q And do you have any additions or corrections to make to
19 your testimony?

20 A No, I don't.

21 Q And if you were asked the questions that are contained in
22 your testimony today, now that you are under oath, would
23 your answers be the same?

24 A Yes, they would.

25 Q And did you also cause to be presented in this case an
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1 exhibit which has been marked as Proposed Exhibit S-1
2 which consists of nine pages?

3 A Yes.

4 Q And did you compile this exhibit?

5 A Yes, I did.

6 MS. BARONE: Your Honor, I'd ask that
7 Ms. Devon's testimony be bound into the record, and move
8 for admission of her exhibit at the conclusion of
9 cross-examination, and tender the witness for
10 cross-examination.

11 JUDGE CUMMINS: Very well. Any objection
12 to binding in Ms. Devon's testimony? Hearing none, the
13 testimony will be bound into record.

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* * * *

In the matter of the application of
the Commissions own motion to)
investigate the appropriateness of) Case No. U- 14561
instituting a surcharge to assist in the)
funding of the Gas Technology Institute)
_____)

**QUALIFICATIONS AND DIRECT TESTIMONY OF
SUSAN CRIMMINS DEVON
MICHIGAN PUBLIC SERVICE COMMISSION**

March 21, 2006

QUALIFICATIONS OF SUSAN CRIMMINS DEVON
CASE NUMBER U-14561
PART I

1 Q. Please state your name and business address.

2 A. My name is Susan Crimmins Devon and my business address is 6545 Mercantile
3 Way, Lansing, Michigan 48911.

4 Q. By whom are you employed and in what capacity?

5 A. I am employed by the Michigan Public Service Commission as Director of the
6 Regulated Energy Division.

7 Q. Please describe your educational background.

8 A. I received a Bachelor of Business Administration Degree with a major in
9 accounting from Western Michigan University in 1976. I attended the National
10 Association of Regulatory Utility Commissioners (NARUC) sponsored short
11 course on regulation in 1980 and the NARUC Advanced Regulatory Studies
12 Program in 2000. I am a Certified Public Accountant registered in the State of
13 Michigan.

14 Q. What is your professional background?

15 A. Upon graduation from Western, I worked as an accountant for the Sonneveldt
16 Company, a distribution company in Grand Rapids, Michigan. I obtained the
17 position of compliance auditor in the Financial and Accounting Standards Section
18 of the Technical Services Division of the Public Service Commission in
19 November of 1978. I worked as a rate case auditor in the Gas Audit Section of
20 the Gas Division from January 1982 through September 1983. While in this
21 position I was responsible for conducting investigations and testifying on
22 accounting and ratemaking issues in numerous gas utility rate cases.

QUALIFICATIONS OF SUSAN CRIMMINS DEVON
CASE NUMBER U-14561
PART I

1 I have investigated and testified in numerous Gas and Electric general rate
2 proceedings, Gas Cost Recovery reconciliation proceedings, tax and depreciation
3 cases, intrastate pipeline and storage rate cases, incentive rate proceedings, gas
4 transportation code of conduct, environmental clean-up and miscellaneous
5 accounting cases.

6 I was responsible for the implementation of the gas customer choice pilot
7 programs and participated in the choice collaborative to establish permanent gas
8 choice programs for Michigan. I have testified before the House Energy
9 Technology Committee on Michigan's Gas Choice Program and general
10 ratemaking and before the Senate Technology and Energy Committee on natural
11 gas issues and the status of electric choice.

12 From 1984 to 1994 I was the manager of the Gas Division's Auditing Section,
13 and from 1994 to 2004 I was the manager of the combined Auditing and Tariff
14 Section of the Gas Division. While in those positions I was responsible for the
15 planning, directing and coordination of gas rate cases as well as the annual audits
16 and case presentation for gas cost recovery reconciliation proceedings. Beginning
17 in 1994 my responsibilities expanded to include the planning and direction of all
18 activities associated with class cost of service studies, rate design and tariff
19 administration.

20 I became the manager of the newly created Rate Section of the Energy Operations
21 Division in the fall of 2002 where I was responsible for the planning, direction
22 and coordination of rate case program activities for all electric and gas rate cases.
23 Beginning in October 2003 I served as the Executive Assistant to Chairman Lark.

QUALIFICATIONS OF SUSAN CRIMMINS DEVON
CASE NUMBER U-14561
PART I

1 In that capacity I advised the Chairman on pending legislative initiatives,
2 commission policy and orders and key utility issues. I was responsible for serving
3 as the Chairman's representative as needed and responding to communications
4 from state and federal legislators and constituents, utility executives,
5 governmental agencies, public interest groups, regulatory associations and the
6 general public.

7 I became the Director of the Regulated Energy Division on May 5, 2004. The
8 Regulated Energy Division is responsible for overseeing all functions relating to
9 the setting of regulated energy rates for all gas and electric utilities in Michigan. I
10 am responsible for planning and directing the activities of the division to meet the
11 mission and legislative mandates of the Public Service Commission.

DIRECT TESTIMONY OF SUSAN CRIMMINS DEVON
CASE NUMBER U-14561
PART II

1 Q. What is the purpose of your testimony?

2 A. The purpose of my testimony is to present Staff's recommendation regarding the
3 appropriate level of support for Gas Technology Institute's (GTI) research efforts.
4 In its June 30, 2005 order the Commission stated that it believes that the
5 appropriate level of support for GTI's research efforts, if any, should be
6 determined on a state-wide basis, rather than by making company-by-company
7 determinations of support and funding requirements. Specifically the
8 Commission said it was establishing this proceeding to explore the appropriate
9 state-wide level of future support and funding for GTI and to consider a
10 mechanism for the recovery of GTI-related support and funding. The
11 Commission indicated that a mechanism could involve an energy surcharge to
12 apply to all gas distribution and transportation volumes in Michigan, a per-meter
13 charge, or another appropriate method of cost recovery. The Commission
14 encouraged the parties to engage in a collaborative process to resolve GTI funding
15 issues if possible but also provided for a contested case process if the parties
16 determined it was not possible to resolve the issue.
17 Further, in an October 18, 2005 order in this case, the Commission found that
18 funding of GTI's efforts has been beneficial to ratepayers in the past and that the
19 recent filing in Case No. U-13898, Michigan Consolidated Gas Company
20 proposed a mandatory surcharge to fund GTI's efforts. The Commission stated
21 that this evidences the interest of at least one LDC in finding a way to continue to
22 support GTI.

DIRECT TESTIMONY OF SUSAN CRIMMINS DEVON
CASE NUMBER U-14561
PART II

1 Q Are you sponsoring any exhibits in this case?

2 A. Yes I am sponsoring Staff Exhibit S-1. This is a copy of GTI's response to
3 Question 1 of Staff's First Discovery Request in this case. It provides details of
4 all the states and individual companies that are providing funding for GTI
5 research programs and projects.

6 Q. Does the Michigan Public Service Commission's Uniform System of Accounts
7 for Major and Non-major Gas Utilities (USOA) define Research and
8 Development (R&D)?

9 A. Yes, per Section I. General Instructions, (1) Definitions, paragraph 31. B:
10 "Research and Development" in the case of major utilities means expenditures
11 incurred by natural gas companies either directly or through another person or
12 organization (such as **research institute**, industry association, foundation,
13 university, engineering company or similar contractor) in pursuing research and
14 development activities including experiment, design, installation, construction or
15 operation. Such research and development costs should be reasonably related to
16 the existing or future utility business, broadly defined, of the company or to the
17 environment in which it operates or expects to operate. The term includes but is
18 not limited to: all such costs incidental to the design, development or
19 implementation of an experimental facility, a plant process, a product, a formula,
20 an invention, a system or similar items, and the improvement of already existing
21 items of a like nature; amounts expended in connection with the proposed
22 development and/or proposed delivery of substitute or synthetic gas supplies
23 (alternate fuel sources for example, an experimental coal gasification plant or an

DIRECT TESTIMONY OF SUSAN CRIMMINS DEVON
CASE NUMBER U-14561
PART II

1 experimental plant synthetically producing gas from liquid hydrocarbons); and the
2 costs of obtaining its own patent, such as attorney's fees expended in making and
3 perfecting a patent application. The term does not include expenditures for
4 efficiency surveys; studies of management, management techniques and
5 organization; consumer surveys, advertising, promotions, or items of a like nature.
6 (USOA – page 5, emphasis added.)

7 Q. Does the GTI and the R&D work it performs fall within the definition of R&D as
8 provided for in paragraph 31.B of the General Instructions in the Commission's
9 USOA?

10 A. Yes, the definition specifically provides for R&D work furnished by research
11 institutes. According to its web-site and information obtained in this proceeding,
12 GTI is the leading research, development, and demonstration (RD&D) organization
13 serving the natural gas industry. GTI has more than sixty years of experience in
14 technology development and training. GTI role includes RD&D needs assessment,
15 program development, research and development efforts, and implementation of
16 technologies and effective issue resolution. The type of R&D work performed by
17 the GTI is fully explained in the testimony of Ronald Edelstein.

18 Q. Please identify some of the accounts that are provided for by the Commission's
19 USOA in which gas utilities may record R&D expenses as defined in paragraph
20 31.B of the General Instructions.

21 A. The USOA provides that R&D expenditures can be recording in two Balance
22 Sheet Accounts:
23 Account 107. Construction Work in Progress – Gas.

DIRECT TESTIMONY OF SUSAN CRIMMINS DEVON
CASE NUMBER U-14561
PART II

1 C. Expenditures on research and development projects for
2 construction of utility facilities are to be included in a separate subdivision in this
3 account. Records must be maintained to show separately each project along with
4 complete detail of the nature and purpose of the research and development project
5 together with the related costs. (Page 45)

6 Account 185. Research, Development and Demonstration Expenditures

7 A. This account shall include the cost of all expenditures coming
8 within the meaning of Definition 31.B of the Uniform System of Accounts, except
9 those properly includible in Account 107, Construction work in progress – Gas.

10 B. Cost that are minor or of a general or recurring nature shall be
11 transferred from this account to the appropriate operating expense function or if
12 such costs are common to the overall operations or cannot be feasibly allocate to
13 the various operating accounts, then such costs shall be recorded in Account 930,
14 Miscellaneous general expenses.

15 C. In certain instances a company may incur large and significant
16 research expenditures which are nonrecurring and which would distort the annual
17 research and development charges for the period. In such a case the portion of
18 such amounts that cause the distortion may be amortized to the appropriate
19 operating expense account over a period not to exceed five years unless otherwise
20 authorized by the Commission.

21 D. The entries in this account must be so maintained as to show
22 separately each project along with complete detail of the nature and purpose of

DIRECT TESTIMONY OF SUSAN CRIMMINS DEVON
CASE NUMBER U-14561
PART II

1 the research and development project together with the related costs. (Pages 73
2 and 74)

3 The USOA further provides for R&D operating expense accounts as follows:

4 Account 703 – Miscellaneous Steam Expenses. (page 187)

5 Account 735 – Miscellaneous Production Expenses (page 200)

6 Account 759 – Other Expenses (page 209)

7 Account 776 - Operation Supplies and Expenses (page 214)

8 Account 834 – Other Expenses (page 231)

9 Account 841 – Operation Labor and Expenses (page 234)

10 Account 859 – Other Expenses (page 251)

11 Account 930.2 – Miscellaneous General Expenses (page 283):

12 Item 4. For major companies, research and development expenses not
13 charged to other operation and maintenance expense accounts on a functional
14 basis. For non-major companies, experimental and general research work for the
15 industry.

16 Q. Have any of the gas utilities participating in this case filed in support of a funding
17 mechanism for GTI's R&D work?

18 A. Unfortunately, not as of the date of the filing of this testimony. Wisconsin Public
19 Service Corporation, Northern States Power Company d/b/a Xcel Energy, and
20 SEMCO Energy Gas Company all filed letters in the docket indicating that they
21 would not be filing direct testimony in this case but reserve the right to file
22 rebuttal. Michigan Consolidated Gas Company and Aquila Inc. d/b/a Aquila
23 Networks MGU did not file either testimony or a letter advising the Commission

DIRECT TESTIMONY OF SUSAN CRIMMINS DEVON
CASE NUMBER U-14561
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1 of its decision to take no action on the due date for the filing of their direct
2 testimony. Consumers Energy on the other hand filed very brief testimony stating
3 it does not support state-by-state funding for GTI or a rate mechanism with a
4 presumption of reasonableness for the recovery of expenditures on behalf of GTI
5 to gas utilities that arrange for GTI research because it places the burden of proof
6 for the reasonable use of research funds on the individual utilities. Thus, so far
7 the record in this case includes the testimony of only one Michigan gas utility
8 company and that company is opposing a state wide funding mechanism.

9 Q. Did any intervenors file testimony in support of state wide funding for GTI R&D
10 work?

11 A. No. ABATE did not file a direct case in this docket. The Attorney General filed
12 the testimony of Mr. Charles King in which he recommends that the funding be
13 purely voluntary and that the gas distribution companies should be responsible for
14 supporting GTI with no guarantee that their support will be reimbursed by
15 ratepayers. He testified that the gas utilities should be required to make an
16 independent analysis and evaluation of each of GTI's R&D projects and if
17 beneficial to ratepayers, seek reimbursement in a contested rate case.

18 Q. What is Staff's recommendation regarding the Commission's order to explore the
19 appropriate state-wide level of future support and funding for GTI?

20 A. First I would point out that besides GTI, the only party to file substantive
21 testimony in this case, the Attorney General, agrees that R&D activities can be
22 beneficial to utility ratepayers. The Attorney General's witness specifically
23 testified, "Ultimately, both the gas distribution companies and their customers

DIRECT TESTIMONY OF SUSAN CRIMMINS DEVON
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benefit from the R&D activities of GTI.” Staff agrees, as did the Commission in its order of October 18, 2005 in this case, where the Commission stated that funding of GTI’s efforts has been beneficial to ratepayers in the past. The Staff therefore recommends that the Commission continue to support funding of GTI’s research efforts at the state level. The Commission would express this support in future rate cases by approving a contribution from ratepayers, not to exceed a fixed amount equal to each individual utility’s total gas throughput multiplied by \$0.0174 per Mcf. Thus, if a utility’s rate case adjusted throughput was 10 million Mcf, the maximum annual contribution from ratepayers would be \$174,000; the actual ratepayer contribution would be requested by each of Michigan’s gas utilities on a voluntary basis, and would be incorporated in the revenue requirements of the utility if approved by the Commission. After receiving Commission approval, each utility would decide on a project by project basis those GTI R&D activities that will benefit its ratepayers, and would transfer customer payments to GTI to help fund those R&D activities. Utilities will be required to provide support for R&D funding decisions in future rate proceedings. Mr. Ronald Edelstein provided potential criteria that could be used by the Commission and gas utilities in determining whether R&D expenses should be recovered from ratepayers in his direct testimony. If the annual fixed amounts collected in rates exceed amounts that the utility wishes to contribute to GTI projects in any particular year, any excess amounts should be deferred and used to fund future year’s R&D projects.

Q. Please summarize the Staff’s recommendations with regard to GTI funding.

DIRECT TESTIMONY OF SUSAN CRIMMINS DEVON
CASE NUMBER U-14561
PART II

- 1 A. Staff recommends that the Commission not require mandatory GTI funding
2 through a fixed surcharge, but rather support voluntary funding through inclusion
3 of these amounts in each utility's revenue requirements in a general rate
4 proceeding. Amounts paid to GTI pursuant to a voluntary funding program
5 should be recorded in Account 930.2 – Miscellaneous General Expenses, in
6 accordance with the Commission's USOA as described earlier in my testimony.
7 Rate recovery should be provided for in the same manner as any other utility
8 operating expense. Continued support for funding should be based upon benefits
9 to the ratepayers and amounts included in rates should be ordered by the
10 Commission to be contributed to GTI for utility selected projects.
- 11 Q. Does this complete your testimony?
- 12 A. Yes it does.

1 JUDGE CUMMINS: Again, we'll begin with
2 the -- well, not the applicant -- we'll begin with GTI.
3 Mr. Nelson, any questions for this witness?

4 MR. NELSON: No questions for this
5 witness.

6 JUDGE CUMMINS: Very well. Mr. Strong,
7 any questions for this witness?

8 MR. STRONG: Yes, your Honor.

9 CROSS-EXAMINATION

10 BY MR. STRONG:

11 Q Good morning.

12 A Good morning.

13 Q Ms. Devon, I have a few questions that I would like to
14 ask regarding how you envision a voluntary program to
15 evolve, if you will, in Michigan.

16 A O.K.

17 Q First of all, would the utility identify which GTI
18 program it wishes to support?

19 A Yes.

20 Q Would it do so in conjunction with input from its
21 customers?

22 A It would do so in the context, my vision of what I'm
23 recommending here would be they would do it in the
24 context of a rate case when they're seeking recovery of
25 funds, of money for the GTI funding. So, you know,

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1 whatever steps they take prior to making their filing,
2 whether that's working with their customers or other
3 intervenors, that could be part of the process. It
4 wouldn't be required, it would be up to the utility,
5 because this would be voluntary on their part.

6 Q O.K. Would you envision that in the context of a
7 voluntary program, that, let's say, prior to the filing
8 of a rate case, a utility would commit to the funding of
9 a particular program and then seek during the rate case
10 reimbursement for those costs?

11 A When you mean commit, you mean commit to GTI?

12 Q Yes. In other words, sign a contract that we're going to
13 try to fund you to a certain level.

14 A I had not considered that, no.

15 Q O.K. Would it be possible that in the test year that
16 would be considered by the commission, that the utility
17 would project that, look, we would like to fund GTI up to
18 a particular level?

19 A Yes.

20 Q In your opinion, would the utility have to perform a cost
21 benefit analysis to demonstrate to the commission that
22 expenditures for the identified program were just and
23 reasonable?

24 A In my opinion, it's up to the utility to provide to the
25 commission in their filing any information that they

1 believe supports the funding program that they, that they
2 are going to be asking for, the burden would be on them.
3 If they feel that a cost benefit analysis should be done,
4 then that would be up to them.

5 Q Well, in your testimony you say that has to have benefits
6 to ratepayers; is that correct?

7 A Yes, I would hope that anything that they were seeking
8 recovery of would have benefits to the ratepayers.

9 Q And so in order to demonstrate that, you would have to
10 have a cost benefit analysis; is that correct?

11 A I'm not sure what you mean by a cost benefit analysis in
12 this particular instance. The company would obviously be
13 looking at programs that they would be willing to support
14 research for with the GTI. I'm not sure that you can do
15 a cost benefit analysis on that because I'm not sure --
16 well, I'm not really sure how you would do that. I think
17 I've referred back to the testimony of the GTI witness
18 with respect to the criteria that he would recommend be
19 looked at as far as whether or not there are benefits, I
20 have no problem with that. But ultimately I believe it's
21 up to the utility to make a case to the commission
22 through their filing for recovery of these costs. The
23 burden of proof would be on them.

24 Q Turn to page 11 of your testimony, please.

25 A Yes.

1 Q You talk about, beginning on line 8, "Continued support
2 for funding should be based upon benefits to the
3 ratepayers ...". How would you propose measuring those
4 benefits?

5 A Well, again, referring back to the testimony of the GTI
6 witness, I believe that the company could look at those
7 and make a determination of whether or not those projects
8 that they want to support are beneficial. Again, I would
9 leave it up to the company. The utility would make that
10 case.

11 Q Now, in the context of reviewing the benefits, let's
12 assume for the purposes of this question that the R&D
13 effort, if indeed successful, will only provide benefits,
14 say, in six years, however, the funding would start now.
15 Should the fact that the benefits are going to be
16 received, if at all, in the future, be factored into a
17 determination of what benefits there are for ratepayers?

18 A They could, yes, it could.

19 Q They could or should?

20 A Again, I think it's up to the utility to decide when they
21 come in and ask for recovery to put forward the case for
22 recovery. I don't have any limitations on that in my
23 mind at this point in time.

24 Q O.K. In the context of an R&D project that GTI would
25 entertain, let's assume it's just a residential furnace

1 improvement, should the cost of that type of a program be
2 confined to the residential class of customers or
3 allocated to all classes?

4 A Again, that would have to be determined in the context of
5 the rate case. I think that the utility will come
6 forward with a level of funding, they'd have to provide
7 information as to the benefits that they believe would be
8 provided, and they'd make a recommendation on who should
9 pay for it, and then that would be subject to the
10 contested case proceedings.

11 Q Would you agree that there's been substantial
12 conservation by end-use gas utility customers as a result
13 of the high commodity prices?

14 A I was here this morning, and I did hear the witness say
15 that, especially this past year; I agree with that. We
16 have seen in this past winter a lot of conservation on
17 the part of residential ratepayers with respect to their
18 gas usage, of which is directed towards the fact that the
19 price was really high.

20 Q Have you seen any demand destruction in the industrial
21 sector?

22 A I haven't done any study on that at all. But if you're
23 saying has there been reduction in industrial use, I
24 can't give you an answer to that right offhand.

25 Q Now, assuming that a utility applies to the commission

1 for a rate increase to fund GTI, all other things being
2 equal, that would put a down, well, put pressure on
3 consumers to conserve even further?

4 A I'm not sure that I would go that far. What I'm
5 recommending is a surcharge of -- not a surcharge. I'm
6 sorry -- a cost that would not exceed 1.74 cents per Mcf.
7 I'm not sure what kind of an impact that would have on
8 customers to conserve.

9 Q Well, page 10 of your testimony, you talk about that 1.74
10 cents.

11 A Yes.

12 Q And you had a hypothetical that the cost would be a
13 certain amount based upon a throughput of 10 million Mcf.

14 A Right.

15 Q What is the throughput of Consumers, roughly?

16 A I'm going to -- I'm taking a guess. 200 Bcf, 250 Bcf. I
17 know MichCon is about 300 Bcf.

18 Q So in order to figure out what the overall impact would
19 be of the proposal to have not to exceed 1.74 cents, you
20 would multiply it times those throughputs?

21 A Yes, correct.

22 Q Now, on page 10 of your testimony, lines 19 through 22, I
23 think you're talking about excess funds from year to
24 year; is that correct?

25 A Correct.

1 Q And so if there are excess funds, then they would be, in
2 essence, held by the utility and then sent to GTI in some
3 subsequent year; is that correct?

4 A Correct. Based on projects that the company determined
5 would be appropriate for funding.

6 Q Now, would those projects need commission approval in
7 terms of determination of whether or not they will
8 provide benefits to customers?

9 A Not on an annual basis, no. The utilities don't file
10 rate cases annually, so, you know, I think I envision
11 that as they come in for a future rate case, they will be
12 making a case for future funding, and at that point in
13 time, a determination would be made.

14 Q Well, in the context of your testimony here, we have
15 excess funds, correct, at the end of the year?

16 A If there are any.

17 Q If there are excess funds. I just want to --

18 A Right. If the commission has approved a certain level of
19 funding for GTI, say in this instance \$174,000 -- that's
20 pretty low, but that's just the example here -- if the
21 utility was allowed to recover that in the rates, then my
22 expectation would be that they would provide those funds
23 to GTI, that they wouldn't just collect that and then
24 decide, well, we don't want to fund GTI at this point in
25 time but continue to collect. So but perhaps they'd find

1 in one year they don't have enough, that there aren't
2 enough projects that they think should be or would be
3 beneficial to the ratepayers so they don't want to put
4 \$174,000 to GTI, part of that could remain and then be
5 used for future, if a future project was shown to be
6 beneficial or the utility felt that was beneficial.

7 In other words, you know, the purpose of
8 my testimony there is to ensure that the utilities don't
9 collect money from the ratepayers and then not provide
10 the funding to GTI.

11 Q O.K. Assuming that there are excess funds that are being
12 held by the utility at the end of the year, should those
13 excess funds accrue interest?

14 A I didn't make a recommendation on that.

15 Q In putting together your testimony, did you review the
16 settlement agreement that was approved by the FERC
17 related to GTI funding?

18 A I have seen the settlement and I have read it, but it did
19 not -- I did not use that in preparing my testimony in
20 this case.

21 MR. STRONG: I have nothing further, your
22 Honor.

23 JUDGE CUMMINS: Very well. Mr. Moody,
24 anything on behalf of the attorney general?

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1 CROSS-EXAMINATION

2 BY MR. MOODY:

3 Q I think just one follow-up question on an answer in your
4 testimony. At page 10 where you talk about the excess
5 amounts, I just was kind of had some more questions about
6 how does, how that gets done, I guess the question would
7 be. So in the rate case, the utility wants to fund a, do
8 a certain amount for these projects, those projects we
9 look at to see whether they're reasonable and prudent,
10 whatever, they have benefits and stuff. And if there's
11 excess money left over and there's not a rate case
12 happening because a couple years going here, the utility
13 gets to select another project, but that project, though,
14 isn't then reviewed by anybody as to whether that's got
15 benefits to anybody, right?

16 A If the commission approves a level of funding for GTI,
17 the utility will be collecting that on an annual basis,
18 and I would expect that the utility would have projects
19 that would be in mind that they want to contribute to.
20 The commission will not probably have looked at all of
21 those, depending on the period of time that has passed
22 since the commission looked at the original amount that
23 they were going to allow recovery of, but that since the
24 company is, would be getting that on a annual basis, they
25 would be making those decisions annually and making

1 contributions to GTI annually. In the event that they
2 don't have projects that they, the utility doesn't have a
3 project that they want to fund for some period, for some
4 reason, and so they have excess money from the annual
5 amount they're collecting, that's what I'm saying should
6 be deferred and used for a future project, rather than
7 the company just keep that money.

8 Q O.K. So it still goes to GTI?

9 A Right.

10 Q Because otherwise, you're right, we just lose the money
11 essentially?

12 A Right. And that's what I'm trying to address. I would
13 want the utility to provide the funds that they're
14 collecting in their rates to GTI for projects that they
15 think are beneficial, but if they don't have a project
16 that they think is beneficial, they shouldn't just give
17 them the money, they should defer that and then give the
18 money when they have a project that's beneficial.

19 Q So there would be like an arrangement with GTI with the
20 utility that this money would then be held for a future
21 project?

22 A An arrangement with GTI? No.

23 Q Is that --

24 A No. That's not what I would envision.

25 MR. MOODY: All right. I think that's

1 it. That's all my questions.

2 JUDGE CUMMINS: Very well. Ms. Wellman,
3 anything of this witness?

4 MS. WELLMAN: No, your Honor.

5 JUDGE CUMMINS: Mr. Middleton?

6 MR. MIDDLETON: No questions, your Honor.

7 JUDGE CUMMINS: Ms. Morris?

8 MS. MORRIS: No questions.

9 JUDGE CUMMINS: Ms. Barone, any redirect?

10 MS. BARONE: Can I have a moment with the
11 witness?

12 JUDGE CUMMINS: Certainly.

13 (There was a brief in-place recess.)

14 JUDGE CUMMINS: Let's go back on the
15 record.

16 Any questions, Ms. Barone, on redirect?

17 MS. BARONE: No questions, your Honor.

18 JUDGE CUMMINS: Very well. We have one
19 exhibit designated as S-1. Any objection to the receipt
20 of Exhibit S-1? Hearing none, Exhibit S-1 is received
21 into evidence.

22 You may step down.

23 THE WITNESS: Thank you.

24 (The witness was excused.)

25 JUDGE CUMMINS: Are there any other

1 matters the parties would like us to address today before
2 we close the record in this matter? Very well.

3 I would remind the parties that, again,
4 because it's a paperless case, we're going to need either
5 the submission of electronic versions of any exhibits
6 that have been changed. I don't think that has occurred
7 today. If you have the current electronic version
8 already in the file, just simply send a note to case
9 management, probably to Deb Berry's attention, indicating
10 that that is the situation.

11 The other thing we need to discuss is
12 that we've got two dates for briefing already established
13 by our amended schedule; this would be June 22nd for the
14 submission of briefs and July 10th for the submission of
15 reply briefs.

16 Is there anything further today? Hearing
17 none, the record is closed. Thank you very much.

18 (Proceedings concluded at 10:49 a.m.)

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C E R T I F I C A T E

I, Lori Anne Penn (CSR-1315), do hereby
certify that I reported in stenotype the proceedings had
in the above-entitled matter, that being Case No.
U-14561, before Mark E. Cummins, J.D., Administrative Law
Judge with SOAHR, at the Michigan Public Service
Commission, 6545 Mercantile Way, Lansing, Michigan, on
Thursday, June 1, 2006; and do further certify that the
foregoing transcript constitutes a true and correct
transcript of my stenotype notes.

LoriAnnePe
nn

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Lori Anne Penn, CSR-1315
33231 Grand River Avenue
Farmington, Michigan 48336

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