

**RELATED CORRESPONDENCE**

DOCKETED  
USNRC

**UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION  
BEFORE THE ATOMIC SAFETY AND LICENSING BOARD**

September 23, 2004 (4:33PM)

OFFICE OF SECRETARY  
RULEMAKINGS AND  
ADJUDICATIONS STAFF

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In the Matter of

Docket No. 70-3103

Louisiana Energy Services, L.P.  
National Enrichment Facility

ASLBP No. 04-826-01-ML

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**RESPONSES ON BEHALF OF  
PETITIONERS  
NUCLEAR INFORMATION AND RESOURCE SERVICE  
AND  
PUBLIC CITIZEN  
TO INTERROGATORIES  
BY COMMISSION STAFF**

Petitioners Nuclear Information and Resource Service and Public Citizen ("NIRS/PC") respond herein to the interrogatories served by the Staff of the Nuclear Regulatory Commission on September 9, 2004. The interrogatories, followed by the response by NIRS/PC, are as follows:

INTERROGATORY NO. 1:

Identify each person who was consulted and/or who supplied information in preparing the NIRS/PC contentions admitted in this proceeding, and identify all documents, reports, texts, literature or other matters reviewed by each person in preparing the admitted contentions.

Response: The contentions made by NIRS/PC are based upon investigations that are continuing. At the time the contentions contained in the NIRS/PC petition dated April 6, 2004, were presented, those contentions were prepared with the assistance of the individuals whose resumes are attached to the petition and, in addition:

- a. Michael Mariotte  
Executive Director  
Nuclear Information and Resource Service  
1424 16<sup>th</sup> Street N.W., Suite 404  
Washington, D.C. 20036
- b. Joseph Malherek  
Policy Analyst  
Critical Mass Energy and Environment Program  
PUBLIC CITIZEN  
215 Pennsylvania Ave SE  
Washington, DC 20003
- c. Michele Boyd  
Critical Mass Energy and Environment Program  
PUBLIC CITIZEN  
215 Pennsylvania Ave SE  
Washington, DC 20003
- d. Don Hancock  
Southwest Research and Information Center  
105 Stanford, S.E.  
Albuquerque, NM 87106

NIRS/PC object to identifying residence addresses as irrelevant and unnecessary. The documents reviewed in preparing the admitted contentions have been identified by NIRS/PC in their response pursuant to Rule 2.704(a), dated Sept. 2, 2004.

**INTERROGATORY NO. 2:**

Identify each person who was consulted and/or who supplied information in responding to the requests for admission or interrogatories set forth herein. Indicate for which specific requests for admission, or interrogatories, each person was consulted and/or supplied information. For each such person, identify the individual's occupation, training and qualifications.

Response: Persons consulted in responding to these interrogatories are:

- a. George Rice  
414 East French Place  
San Antonio, TX 78212  
(210) 737-6180

Subjects: Ground and surface water hydrology

- b. Arjun Makhijani  
Institute for Energy and Environmental Research  
6935 Laurel Ave., Suite 201  
Takoma Park, MD 20912  
(301) 270-5500

Subjects: Depleted uranium conversion and disposal

- c. Charles Komanoff  
636 Broadway  
Room 602  
New York, NY 10012  
(212) 260-5237

Subjects: Energy markets and economics of energy production; economics of  
deconversion and disposal

- d. Michael F. Sheehan  
33126 Callahan Road  
Scappoose, OR 97056  
(503) 543-7172

Subjects: Utility economics; solid waste regulation; nuclear economics

Resumes of George Rice and Arjun Makhijani are attached to the Petition dated April 6, 2004.

Resumes of Charles Komanoff and Michael F. Sheehan are attached to this response.

**INTERROGATORY NO. 3:**

Identify any person you will use as a witness in this proceeding to testify regarding the admitted NIRS/PC contentions. If you rely on any such person as an expert witness, state the details of each witness's education, professional qualifications, and employment history; state the subject matter on which each of the witnesses is expected to testify at the hearing; describe the facts and opinions to which each witness is expected to testify, including a summary of the grounds for each opinion; and identify all documents, data, or other information which each witness has reviewed and considered or is expected to rely on for his or her testimony.

Response: Investigations by expert consultants for NIRS/PC are continuing, and NIRS/PC object to presenting in detail the matters that each witness proposes to offer in testimony to support the contentions of NIRS/PC, since (a) the witnesses have been identified in Rule 2.704(a) disclosure by NIRS/PC, (b) depositions of the NIRS/PC witnesses are scheduled to be taken shortly by counsel for the Applicant, Louisiana Energy Services, L.P., and Commission Staff, and (c) the Atomic Safety and Licensing Board has scheduled the submission of written direct testimony on December 30, 2004 and September 16, 2005, well in advance of the hearings scheduled in this matter. In brief, the witnesses identified by NIRS/PC will present evidence on facts stated in the Petition dated April 6, 2004. The documents that the respective witnesses will rely upon are listed in the NIRS/PC Rule 2.704(a) disclosure dated September 2, 2004. Additional documents are being reviewed continuously by the investigators and can be identified by the witnesses in their depositions or prepared direct testimony. NIRS/PC object to responding further to this interrogatory at this time on the grounds that it is burdensome and unproductive to do so, since the witnesses are soon to be examined at oral depositions.

INTERROGATORY NO. 4:

Do you intend to rely on any evidence or testimony presented in a previous proceeding relating to the licensing of a uranium enrichment facility? If so, identify the proceeding and state the nature of the evidence or testimony, including citations to the portions of any transcripts you intend to rely on.

Response: Expert investigators are still looking into the matters that they will cover in their testimony. They have not identified specific testimony from a previous proceeding upon which they intend to rely, but, since they have not completed their reviews, they may at some point identify such testimony.

INTERROGATORY NO. 5 (Decommissioning Costs)

State all facts that support your contention that the contingency factor used by LES to determine decommissioning costs is inadequate.

Response: Charles Komanoff is conducting an investigation of this matter. At present he holds the view that the proposed contingency factor fails to account for all risks of the decommissioning effort. Komanoff will be better positioned to answer this question once LES has responded to interrogatories from NIRS pertaining to decommissioning cost experience at other facilities. NIRS/PC object to answering this interrogatory further at this time due to the continuing nature of the investigation.

INTERROGATORY NO. 6 (Decommissioning Costs)

Identify all aspects of the decommissioning cost estimate to which you allege an inadequate contingency factor has been applied.

Response: Charles Komanoff is conducting an investigation of this matter. At present he holds the view that the proposed contingency factor fails to account for all risks of the decommissioning effort. Komanoff will be better positioned to answer this question once LES has responded to interrogatories from NIRS pertaining to decommissioning cost experience at other facilities. NIRS/PC object to answering this interrogatory further at this time due to the continuing nature of the investigation.

INTERROGATORY NO. 7 (Decommissioning Costs)

State what contingency factor you allege is appropriate and state all facts which support the use of that contingency factor. Specify what specific aspects of the cost estimate you allege should be subject to the contingency factor and what contingency factor should be applied to each identified aspect of the cost estimate. State all facts that support your calculation of the contingency factors identified.

Response: Charles Komanoff is conducting an investigation of this matter. At present he holds the view that the proposed contingency factor fails to account for all risks of the decommissioning effort. Komanoff will be better positioned to answer this question once LES has responded to interrogatories from NIRS pertaining to decommissioning cost experience at other facilities. NIRS/PC object to answering this interrogatory further at this time due to the continuing nature of the investigation.

INTERROGATORY NO. 8 (Decommissioning Costs)

State all facts that support your contention that LES has included an inadequate capital cost in estimating decommissioning costs.

Response: Charles Komanoff is conducting an investigation of this matter. At present he holds the view that the proposed contingency factor fails to account for all risks of the decommissioning effort. Komanoff will be better positioned to answer this question once LES has responded to interrogatories from NIRS pertaining to decommissioning cost experience at other facilities. NIRS/PC object to answering this interrogatory further at this time due to the continuing nature of the investigation.

INTERROGATORY NO. 9 (Decommissioning Costs)

State what cost of capital you allege is appropriate and all facts which support the use of that cost of capital.

Response: NIRS/PC object to this interrogatory as unclear and insufficiently defined. It is not stated what capital expenditures are to be financed by the cost of capital referred to, nor what elements of the application in issue are referred to. Further, Komanoff will be better positioned to answer this question once LES has responded to interrogatories from NIRS pertaining to decommissioning cost experience at other facilities. NIRS/PC object to answering this interrogatory further at this time due to the continuing nature of the investigation.

INTERROGATORY NO. 10 (Costs of Management and Disposal of DUF<sub>6</sub>)

State all facts which support your contention that LES relied on inappropriate cost estimates contained in the LLNL Report for determining the costs for management and disposal of DUF<sub>6</sub>. Specify any uncertainties which you rely on to support this contention.

Response: The investigation by NIRS/PC is continuing on this subject. As previously stated, the estimates contained in the LLNL Report cannot validly be applied to the management and disposal of DUF<sub>6</sub> waste from the proposed NEF. See NIRS/PC Reply to Answer of LES, at 14-18 (May 10, 2004). In general, the LLNL Report itself reveals that the cost figures extracted from it by LES are inappropriate for the type of facility needed to convert and dispose of DUF<sub>6</sub> waste from the NEF, e.g., because conversion of DUF<sub>6</sub> from the NEF will involve a much smaller volume and greater commercial uncertainty than the facility studied by LLNL. Since investigations are continuing, NIRS/PC object to answering further at this point.

INTERROGATORY NO. 11 (Costs of Management and Disposal of DUF<sub>6</sub>)

Identify what costs in the LLNL or other report you contend should be used to estimate the costs of managing and disposing of DUF<sub>6</sub>.

Response: NIRS/PC object to this request. NIRS/PC do not have the burden to develop fully accurate estimates of the cost of managing and disposing of DUF<sub>6</sub> and have not, as yet, done so. NIRS/PC object to the request to perform new calculations in response to this interrogatory. The question here is whether the Applicant, LES, has presented a "plausible strategy" for management and disposal of DUF<sub>6</sub>, including plausible cost estimates. In addition, since investigations are continuing, and more light will be shed on such costs, NIRS/PC object on grounds of burden to answering further at this point.

INTERROGATORY NO. 12 (Costs of Management and Disposal of DUF6)

State all facts that support your contention that steel used in construction of the NEF would be contaminated and therefore classified as low level waste.

Response: NIRS/PC object to answering this request in advance of the completion of disclosure by LES and its review by expert investigators. Documents produced by LES, including documents directly related to decommissioning costs and to contamination of facility components, are still being reviewed by NIRS/PC investigators. At present, as related in the Petition, NIRS/PC are aware that steel recyclers in the United States will not accept steel with detectable radioactive contamination. (See statements by Steel Manufacturers Association: 2000-2001 Public Policy Statement, Steel Manufacturers Association (Washington, D.C.) 26-27; Stuart, E., Statement of the Steel Manufacturers Association, testimony before the U.S. Department of Energy regarding the Notice of Intent to Prepare a Programmatic Environmental Impact Statement on the Disposition of Scrap Metals, 16 Aug. 2001). In consequence, a significant amount of the steel used in construction of the deconversion plant will have to be disposed of as low-level radioactive waste.

INTERROGATORY NO. 13 (Costs of Management and Disposal of DUF6)

State all facts which support your contention that, because the cost is premised upon disposal in an engineered trench, the cost of disposal estimates provided by LES are inadequate.

Response: NIRS/PC are still carrying out their investigation of the costs of disposal. However, at present it seems likely that the facts will show that an engineered trench is an unacceptable means of disposal in many locations, because releases to the environment will exceed acceptable limits, and that the costs of deeper disposal, as in a mined cavity, will exceed the amounts

estimated by LES. NIRS/PC object on grounds of burden to answering this interrogatory further until their investigations are complete.

INTERROGATORY NO. 14 (Impacts on Ground and Surface Water)

Does your proffered expert witness, George Rice, have any experience evaluating radiological contamination of groundwater or surface water? If so, please describe in detail such experience.

Response: Mr. Rice's experience with evaluating radiological contamination of groundwater includes his work on: 1) the UMTRA Project, 2) the Pantex Plant, and 3) Los Alamos National Laboratory.

INTERROGATORY NO. 15 (Impacts on Ground and Surface Water)

Does your proffered expert witness, George Rice, have any experience evaluating environmental reports of NRC license applicants? If so, please describe in detail such experience.

Response: Besides work related to LES's application, Mr. Rice has reviewed DOE documents related to the proposed Yucca Mountain repository.

INTERROGATORY NO. 16 (Impacts on Ground and Surface Water)

As background for this Contention, you reference the fact that stormwater runoff from the LES site (other than from the UBC storage pad) would be directed to an unlined stormwater detention basin. Are you contending there is any risk that such stormwater runoff could become contaminated? If so, please describe in detail your basis for this position.

Response: According to LES's ER RAI Response of May 20, 2004, the discharge to the stormwater basin ... *will be typical of runoff from building roofs and paved areas from any industrial facility.*<sup>1</sup> The discharge will include ... *small amounts of oil and grease typically found*

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<sup>1</sup> LES, 2004b, page 33.

*in runoff from paved roadways and parking areas, ...*<sup>2</sup> The discharge may also contain pesticides and fertilizers that will be applied around the facility<sup>3</sup>.

In addition, the discharge to the stormwater basin may contain other contaminants associated with roads, parking lots and industrial facilities. These include: PAHs<sup>4</sup>, various organic compounds (e.g., aliphatic hydrocarbons, alcohols)<sup>5</sup>, metals (e.g., arsenic, lead)<sup>6</sup>, and miscellaneous contaminants resulting from spills and accidents.

INTERROGATORY NO. 17 (Impacts on Ground and Surface Water)

Are you contending that water from the LES lined evaporation ponds would infiltrate into the alluvium beneath the LES site? If so, please state in full your bases for believing that such infiltration would occur, including whether or not your postulated scenario relies in whole or in part on a pond liner failure, and your estimate as to the likelihood that such pond liner failures would occur.

Response: Lined basins often leak. The leakage may be due to manufacturing defects in the geosynthetic liner, installation defects, or deterioration of the liner after it is installed.

A discussion of some factors that contribute the leakage of liners is contained in EPA 1994a<sup>7</sup>.

Laine and Miklas examined 61 geomembrane-lined facilities<sup>8</sup>. The facilities included landfills and impoundments. Most of the geomembranes were made of HDPE, but some were made of PVC (e.g., XR-5) or polyethylene. Leaks were detected in 58 of the 61 facilities. The average density of leaks at all facilities was about 13 per acre.

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<sup>2</sup> LES, 2004b, page 33.

<sup>3</sup> Lockwood Greene, 2004a, page 4.

<sup>4</sup> USGS, 2004a, table 3.

<sup>5</sup> Barrett et al., 1993, table 3.5.

<sup>6</sup> Barrett et al., 1993, appendix A.

<sup>7</sup> EPA 1994a, pages 33 – 35.

<sup>8</sup> Laine and Miklas, 1989.

The EPA recently released a report describing various methods for detecting leaks beneath lined landfills and impoundments<sup>9</sup>.

INTERROGATORY NO. 18 (Impacts on Ground and Surface Water)

Are you claiming that the pond leak detection systems would not be capable of detecting and correcting any pond liner failures? If so, please describe in detail the bases for this claim.

Response: There are many types of leak detection systems<sup>10</sup>, and they may not detect all leaks. The final design of the leak detection system to be used at the proposed site has not yet been produced<sup>11</sup>. Therefore, this interrogatory is objectionable for failure to define “pond leak detection systems.”

INTERROGATORY NO. 19 (Impacts on Ground and Surface Water)

Assuming that a pond liner failure was not detected and corrected, are you claiming that contamination of a potable groundwater system would thereby occur? If so, describe in detail the bases for this claim.

Response: The answer to this question depends, among other things, on the extent of the leak, the nature of the contamination, and where the water leaking from the basins goes. Bodies of groundwater that form as a result of leakage may: 1) be removed by evapotranspiration, 2) flow along the alluvial/Chinle contact, 3) flow into the groundwater system that exists in the Chinle Formation, or 4) flow into the Santa Rosa Aquifer.

LES has not investigated the fate of groundwater bodies that may form as the result of leakage from basins, or discharges to the septic leach fields.

According to the NRC, bodies of groundwater that form beneath the site may be discharged ... *in a minor seep at Custer Mountain or in the excavation 3.2 kilometers (2 miles)*

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<sup>9</sup> EPA, 2004a.

<sup>10</sup> EPA, 2004a.

<sup>11</sup> LES, 2004a, page 6.1-9.

southeast of Monument Draw ...<sup>12</sup> However, the NRC does not explain why they believe that the groundwater may discharge at these locations.

Although there are no water wells within one mile of the site boundary<sup>13</sup>, groundwater in alluvium and the Dockum Group (Chinle Formation or the Santa Rosa Aquifer) has been used in the vicinity of the proposed site<sup>14</sup>. According to the Lea County Water Plan, deeper aquifers such as the Dockum Group may be developed for future water supplies<sup>15</sup>. The plan recommends investigating areas where faulting may have fractured these aquifers<sup>16</sup>.

INTERROGATORY NO. 20 (Impacts on Ground and Surface Water)

In reference to basis (d) of this Contention, state any evidence you have for the presence of subsurface fracture zones in the Chinle Formation. Do you agree that low measured permeability rates in the Chinle Formation would indicate the absence of fracture zones there?

Response: NIRS/PC have no direct evidence of subsurface fracture zones in the Chinle Formation. However, there is a fault in the Chinle at the WCS site<sup>17</sup>. This fault may have fractured the Chinle in the vicinity of the proposed NEF site. The low measured permeability in the Chinle does not indicate the absence of fractures.

INTERROGATORY NO. 21 (Impacts on Ground and Surface Water)

In basis (d) of this Contention, state the meaning of your term "other fast pathways" used there.

Response: Other fast pathways may include faults, sand stringers, or buried channels.

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<sup>12</sup> NRC, 2004a, pages 4-13 and 4-14. Custer Mountain is approximately 20 miles from the site (Nicholson and Clebsch, 1961, plate 2).

<sup>13</sup> NRC, 2004a, page 3-37.

<sup>14</sup> Alluvial wells approximately three miles west of the proposed site have been used for domestic purposes (Nicholson and Clebsch, 1961, page 80 and plate 2). The City of Eunice had an old public supply well in the Dockum. This well was about six miles west of the site (Nicholson and Clebsch, 1961, page 80 and plate 2). The town of Oil Center, about 12 miles northwest of the site, obtains water from the Dockum Group (Leedshill-Herkenhoff, 2000, page 6-12, and Nicholson and Clebsch, 1961, page 69 and plate 2).

<sup>15</sup> Leedshill-Herkenhoff, 2000, page 8-5.

<sup>16</sup> Leedshill-Herkenhoff, 2000, page 8-5.

<sup>17</sup> Harper, 2004a.

INTERROGATORY NO. 22 (Impacts on Ground and Surface Water)

In reference to basis (e) of this Contention, describe any methods you know of for determining the age of water in either the Chinle Formation or the Santa Rosa Formation.

Response: Methods for determining the ages of groundwater in the Chinle or Santa Rosa include measurements of tritium, tritium/helium-3, chlorine-36, and carbon-14.

INTERROGATORY NO. 23 (Impacts on Ground and Surface Water)

If relatively “young” water was found in either the Chinle Formation or the Santa Rosa Formation, would this indicate recharge from the LES site? If so, describe in detail the bases for this claim.

Response: Not necessarily. Young water in the Chinle or Santa Rosa may indicate rapid recharge the LES site. However, the rapid recharge may also originate off-site.

INTERROGATORY NO. 24 (Impacts on Ground and Surface Water)

In basis (g) of this Contention, the term “the Permian” is used. State whether in using this term you are referring to the Permian Basin, Permian deposits, the Dewey Lake Formation, or to some other geologic feature underlying the LES site.

Response: “The Permian” refers to Permian deposits, as described in Nicholson and Clebsch, Table 3.

INTERROGATORY NO. 25 (Impacts on Ground and Surface Water)

In reference to basis (h) of this Contention, are you claiming that LES monitor wells would only monitor conditions in the alluvium. If so, state your bases for making this claim.

Response: No. The monitor well completion intervals are not clearly stated in the LES Environmental Report.

INTERROGATORY NO. 26 (Impacts on Water Supplies)

Does your proffered expert witness, George Rice, support your Water Supply contention? If so, describe in detail his opinions with respect to your Water Supply contention.

Response: Yes. The water used at the proposed facility would be pumped from the Hobbs well field (Lea County Underground Water Basin, Ogallala Aquifer)<sup>18</sup>. Groundwater in the Basin is being pumped at a rate faster than it is being recharged<sup>19</sup>. LES has not determined how this pumpage would affect water levels and the long-term productivity of the Hobbs well field or the Lea County Underground Water Basin.

INTERROGATORY NO. 27 (Impacts on Water Supplies)

If you do not admit that a private conversion facility constructed and built to accept DUF6 from LES would use the same conversion process proposed for use in the DOE facility -- a continuous dry-conversion process based on the commercial process used by Framatome Advanced Nuclear Power, Inc. fuel fabrication facility in Richland, Washington -- state all facts to support your conclusion that a different technology would be used and specify what technology you allege would be utilized.

Response: (This interrogatory is mislabeled and does not involve impacts on water supplies.). NIRS/PC do not admit that a private conversion facility constructed and built to accept DUF<sub>6</sub> from LES would use the same conversion process proposed for use in the DOE facility, inter alia, because the environmental impact statements (EISs) concerning the planned DOE facilities discuss a process different from that selected by LES, which involves the generation of anhydrous HF. (See LES Answer to Petitions of New Mexico Attorney General and NIRS/PC (May 3, 2004), at 72). See also the response to interrogatory 28.

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<sup>18</sup> Louisiana Energy Services, 2004a, page 4.4-5; and Leedshill-Herkenhoff, 2000, page 1 of Executive Summary and page 7-2.

<sup>19</sup> Leedshill-Herkenhoff, 2000, page 1 of Executive Summary and page 5-4.

INTERROGATORY NO. 28 (DU Storage and Disposal)

If you do not admit that the DOE environmental impact statements listed in Request 4 below would bound the impacts of a private conversion facility constructed and operated to convert the DUF6 at LES, state all facts to support your position.

Response: As stated in the response to the Request for Admission No 4, the facilities and processes analyzed in the EISs discussed do not fully correspond to the configuration proposed for construction by LES. In particular, the use of a distillation process to upgrade the hydrofluoric acid resulting from the conversion process to anhydrous hydrofluoric acid through distillation is not considered in the EIS for either the Paducah or Portsmouth facilities. In addition, when the engineering analysis for these proposed facilities was conducted the distillation option was not even commercially developed. The 1997 "Draft Engineering Analysis Report for the Long-Term Management of Depleted Uranium Hexafluoride - Rev. 2" from the Lawrence Livermore National Laboratory (LLNL), which is included as supporting material to the EISs states that

Distillation is a common industrial process and was the design basis for this suboption. The processing of the azeotrope and the process parameters for the conversion reactors were patterned after the General Atomics/Allied Signal response to the RFR and the Sequoyah Fuels Corp. patented process. This representative process has not been industrialized, but the initial research and development have been completed.<sup>20</sup>

The safety of producing, storing, handling and transporting AHF in the context of an enrichment plant based on actual experience is not part of the planned facility.

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<sup>20</sup> J.W. Dubrin et. al., "DEPLETED URANIUM HEXAFLUORIDE MANAGEMENT PROGRAM: The Engineering Analysis Report for the Long-Term Management of Depleted Uranium Hexafluoride Volume I", Lawrence Livermore National Laboratory, May 1997 (UCRL-AR-124080 Vol 1 Rev 2) page 3-8

A further difference between the facilities is that the uranium end product,  $U_3O_8$ , is not appropriate for disposal. The most plausible waste form for the long containment times required would be a zircon-like waste form for eventual disposal in a repository. Without an analysis of the routine and potential accidental exposures associated with these operations and other potential differences in the facilities due to such factors as scale (which, in turn, may affect economics of operation), it is not possible to conclude whether the impacts listed in the cited EISs do or do not bound the impacts of a commercial facility.

In addition to the differences in the proposed configuration and operation of the facilities, the potential for different external initiating events for accidents between their facility locations makes their comparison less appropriate. The inclusion of potential impacts for such events as wildfires in New Mexico could alter the overall environmental impacts from those appropriate to facilities in Kentucky and Ohio. In addition, site-specific population densities should be used for offsite impacts rather than the national averages used in the EISs for the Paducah and Portsmouth facilities.

INTERROGATORY NO. 29 (DU Storage and Disposal)

If you do not admit, in Request 9 below, that formal classification of the waste as low level radioactive waste by the NRC would make DOE disposition of the DU a plausible strategy, state all facts that support your position.

Response: NIRS/PC do not admit that formal classification of the waste as low level radioactive waste by the NRC would make DOE disposition of the depleted uranium (DU) a plausible strategy. Further, a determination that  $DUF_6$  constitutes low-level radioactive waste would require the Commission to examine the proposed conditions of disposal, which the Commission has not done. The disposal method is not stated in the interrogatory, rendering it unclear and objectionable. Whether a method of disposal could be considered "plausible" can

only be stated after a full analysis of the proposed disposal method and its projected performance.

The DU waste should be classified as Greater-than-Class C (GTCC), waste because it has a specific activity that is far greater than 100 nanocuries per gram, and all three of the radioisotopes in it are alpha-emitting radionuclides with very long half-lives (more than 200,000 years in all cases). For both depleted  $U_3O_8$  and depleted  $UO_2$ , the specific activity would exceed 280 nanocuries per gram. Such GTCC waste is equivalent to Transuranic (TRU) waste in the nature of the risk presented, as shown in regulations of the U.S. Environmental Protection Agency. Finally, the radioactivity of the uranium waste will continue to grow for hundreds of thousands of years due to the in-growth of decay products such as thorium-230 and radium-226. To define DU as Class A waste would be entirely inappropriate. The doses arising for DU disposal presented in the DEIS appear to be implausibly low for the stated disposal strategy.

The definition of "DOE disposition" in the interrogatory is not specific enough to draw any conclusions as to whether it is "plausible." GTCC and TRU waste must be disposed of in deep geologic repositories in a waste form that is designed to minimize the peak dose. In addition, the disposal of DU in the form of  $U_3O_8$  is not appropriate. The DU waste should be converted to a ceramic zircon-like waste form for disposal in an NRC licensed repository. The waste form eventually chosen would have to be studied for its stability and durability. The analysis of the repository disposal strategy should be informed by the experience of the Waste Isolation Pilot Plant in New Mexico.

INTERROGATORY NO. 30 (DU Storage and Disposal)

With reference to the DOE environmental impact statements listed in Request 4 below, do you agree with DOE's assessment that extended plant operations would have the environmental impacts presented in Section 5.2.6.2 of

DOE/EIS.0359, and Section 5.2.8.2 of DOE/EIS-0360? If not, state all facts to support your conclusion that the DOE DUF<sub>6</sub> conversion facilities could not process additional DUF<sub>6</sub> outside of their current inventory, and what environmental impacts you allege would result from extended plant operations.

Response: NIRS/PC agree that the designated sections of the EISs refer to possible expansions of operations of conversion plants, which are planned to serve DOE storage sites, not commercial sites, and to use processes which are different from the process chosen by LES.

NIRS/PC have not completed their examination of the environmental impacts reported in those documents and so are not in a position to respond in full with regard to the asserted effects of extended plant operations at Paducah or Portsmouth. NIRS/PC note that the reported capacity of the DOE conversion facilities, as presently planned, will be committed to conversion of DOE-generated waste for 25 years, leaving no capacity for other waste generators. DOE possesses 704,000 metric tons of DUF<sub>6</sub> and predicts that converting its own waste will take 25 years. (Audit Report: Depleted Uranium Hexafluoride Conversion, DOE/IG-0642, U.S. DOE, Office of Inspector General, March 2004). DOE inventories will absorb the capacity of new facilities. (ER 4.13-18).

NIRS/PC do not agree that the environmental impacts of continued operation of the Paducah or Portsmouth facilities beyond their planned operational lifetimes can be accounted for by a simple scaling of the currently predicted impacts. This means of examining the problem does not take into account the likelihood of increased accidents and routine exposures with age as the plants would be operated beyond their originally intended lifetime. In addition, the analysis of the continued operation of the plants does not take into account the risks and impacts associated with the shipment of depleted UF<sub>6</sub> from sites other than Paducah or Portsmouth. If the intention is to consider the impacts of potentially using one or both of these facilities to

process the depleted UF<sub>6</sub> from other commercial facilities located in vastly different regions, then the impact of that transportation has not been taken into account in the EISs cited in Request for Admission No 4. NIRS/PC also do not have confidence that the DOE can operate the plants as safely and in the manner that it projects, since its track record in regard to compliance with environmental regulations and the safety and health of workers and neighbors is spotty or worse.

INTERROGATORY NO. 31 (Need for NEF)

State all facts which you claim support your contention that the LES application, as amended, inadequately describes or weighs the social and economic costs of operating the NEF. State each and every aspect of the ER that you claim is inadequate in this regard, and state all bases for each such claim.

Response: Sheehan has not completed his review of the materials involved in this contention and has yet to see LES's responses to data requests. However, he will address the following issues: The projections of need submitted by LES in the ER; LES's claim that the facility is needed for U.S. national security purposes; the impact of the construction of the facility on nuclear proliferation and U.S. national security interests; the lack of clarity on where the output of the plant is going to be sold, with some indeterminate, but non-negligible, portion of the output to be sold other than to domestic commercial nuclear power plants; the aspects in which the ER is incomplete as to data provided, as indicated in NIRS/PC's outstanding discovery requests on this contention; problems with the cost-benefit analysis in the ER, including the costs of disposal of waste; the hazards of onsite storage of this waste; the benefits and costs of this site relative to other supply locations in the US and purchases from abroad. The examination of the no-action alternative is analytically insufficient with respect to its assumptions about the alternatives and its conclusions. The added cost and risk must be considered due to the need to transport DUF<sub>6</sub>

over much longer distances. Benefits and costs to state and local government and residents of the area are insufficiently developed, and the bases of the calculations have not been provided.

INTERROGATORY NO. 32 (Need for NEF)

If you do not admit the accuracy of the SWU data set forth in Request 8 below, provide the data you believe is accurate as to the relative percentage of domestic SWU's that were provided by enrichment plants in the United States in 2002. State the source of your data.

Response: See the response to Commission Staff Request for Admissions No.8, served September 20, 2004.

INTERROGATORY NO. 33 (Need for NEF)

State the specific NRC regulation, guidance, and/or case law which you believe requires LES to include additional information to that contained in the LES ER regarding the social and economic impacts and costs of operating the NEF. Explain why, in each instance, the regulation, guidance and/or case law is not satisfied.

Response: NRC regulations addressing the discussion of environmental, and other, costs and benefits have been discussed in papers filed by NIRS/PC. The legal requirements are contained in 10 CFR Part 51 and are reflected in specific provisions and caselaw. The cost-benefit analysis required by the National Environmental Policy Act, 42 U.S.C. § 4321, *et seq.* ("NEPA"), has not been fully presented in the ER. "NEPA is generally regarded as calling for some sort of weighing of the environmental costs against the economic, technical, or other public benefits of a proposal." In re *Louisiana Energy Services, L.P.* (Claiborne Enrichment Center), CLI-98-3, 47 NRC 77, 88 (1998). Moreover, the EIS must "to the fullest extent practicable, quantify the various factors considered." 10 CFR § 51.71(d). Such analysis of "public benefits" cannot be limited to economic impacts and should account for a range of benefits sought by national policy. (*LES*, 47 NRC at 95-96). The EIS must "indicate what other interests and considerations

of Federal policy, including factors not related to environmental quality if applicable, are relevant to consideration of environmental effects.” 10 CFR § 51.71(d).

INTERROGATORY NO. 34 (Natural Gas Related Accidents)

State all facts that support your contention that the LES Safety Analysis Report (SAR) does not contain a complete or adequate assessment of accidents involving natural gas transmission facilities. Specify each and every aspect of the SAR that you claim is incomplete or inadequate in this regard, and state all bases for each such claim.

Response: NIRS/PC do not at present plan to present evidence on this issue.

INTERROGATORY NO. 35 (Natural Gas Related Accidents)

State all facts which you claim support your contention that the LES Integrated Safety Analysis (ISA) should be based on module-specific data. Identify all such data, and explain how such data would support the ISA.

Response: NIRS/PC do not at present plan to present evidence on this issue.

INTERROGATORY NO. 36 (Natural Gas Related Accidents)

State the specific NRC regulation or guidance that you believe requires LES to include information -- in addition to that contained in the application, as amended -- regarding the risk of natural gas related accidents. Explain why, in each instance, the regulation or guidance is not satisfied.

Response: NIRS/PC do not at present plan to present evidence on this issue.

The foregoing responses are true and correct to the best of my knowledge.

*Michael Mariotte* 9/23/04  
Michael Mariotte  
Executive Director  
Nuclear Information and Resource Service

Respectfully submitted,

*Lindsay A. Lovejoy, Jr.*

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September 23, 2004

District of Columbia : SS  
Subscribed and Sworn to before me  
this 23<sup>rd</sup> day of September 2004  
Kamal Islam  
Notary Public, D.C.  
My commission expires KAMAL ISLAM  
Notary Public  
District of Columbia  
My Commission Expires 2/14/08

## Charles Komanoff

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### Summary

- Consultant and authority on U.S. energy, transport and environment; nuclear power costs; energy usage and supply; bicycling; road pricing; vehicular accidents; etc.
- New York City activist and advocate for bicycling, pedestrians' rights and strategic pricing of automobile use.

Komanoff is director of the consulting firm **Komanoff Energy Associates**, a founding trustee of the **Tri-State Transportation Campaign**, director of the **Bridge Tolls Advocacy Project**, and co-ordinator of the pedestrian rights organization **Right Of Way**. His work combines expertise in policy analysis, a flair for expressing numerical and economic data in concrete terms, and a passion for progressive social change. Komanoff graduated with honors from Harvard College with a B.A. in Applied Mathematics.

### Authority on U.S. energy, transport and environment

Komanoff's career in policy analysis has primarily addressed two leading sources of environmental and social harm in industrial societies: electricity generation and motor vehicles.

#### Electricity and Nuclear Power

Throughout the 1970s and '80s — the prime years of debate over the future of nuclear power — Komanoff was the leading U.S. source of credible information on reactor costs. Through painstaking data collection, rigorous analysis, numerous articles and books, and clear articulation to journalists, he helped policy-makers and the public grasp the true dimensions of nuclear power's spiraling costs. During this period, Komanoff consulted for two Congressional agencies, the U.S. Department of Energy, and close to two dozen states including New York, California, Texas and Florida; presented expert testimony before the U.S. Nuclear Regulatory Commission and 20 Public Utility Commissions; testified before four Committees of Congress and the Select Committee on Energy of the House of Commons (U.K.); and tutored countless journalists on the extent and causes of cost escalation in the U.S. nuclear power industry.

Komanoff recently represented several Manhattan community groups in evaluating and mitigating a proposal by Con Edison to expand its East 14<sup>th</sup> Street steam-and-electric station; and analyzed the potential for electricity conservation in the New York area for a coalition seeking to shut the Indian Point reactors in Westchester County. Following the 9/11 attacks, he published *Ending The Oil Age*, an imaginative policy prescription for immediately reducing U.S. oil consumption by up to 10%. On a *pro bono* basis, Komanoff is currently rebutting "NIMBY" critics of proposed wind-energy projects in the Northeast U.S., contrasting the facilities' prospective minuscule noise and visual impacts with their robust benefits in displacing fossil fuels.

#### Transport

Komanoff is a founding trustee of the **Tri-State Transportation Campaign**, a confederation of advocacy groups working to reform transport planning and financing in the New York region. He edited and co-authored Tri-State's *Citizen Action Plan*, a holistic approach to regional transport emphasizing road

pricing, center-oriented development and extensive transit upgrades. Tri-State has also published Komanoff's comprehensive analyses of roadway subsidies in New York and New Jersey and his 2003 study of the benefits of "value pricing" (higher peak tolls with off-peak discounts) for New York City bridges and tunnels.

Komanoff conceived and edited the *Bicycle Blueprint*, the most ambitious bike plan ever published for New York (or any other U.S. city). He contributed a volume, *Environmental Benefits of Bicycling and Walking in the United States*, to the Federal Highway Administration's *National Bicycling and Walking Study*. He has spelled out road-pricing proposals in a report for the Energy Foundation and numerous periodicals ranging from the *Pace Environmental Law Review* to NYC newspapers and magazines. He composed the chapter on bicycling for the new (2004) *Encyclopedia of Energy* (Elsevier).

### Environment

Komanoff's work on environmental policy dates to 1972, when he co-directed the **Council on Economic Priorities'** landmark study of pollution in the U.S. electric power industry, *The Price of Power*. In 1972-74 he worked for the **NYC Dept. of Environmental Protection** as a senior environmental economist, composing original analyses that helped stop the Storm King pumped-storage project in the Hudson Highlands and LNG tank farms on Staten Island. Komanoff has published popular and technical articles on air pollution from electric generation and motor vehicles, and he recently contributed the chapter on economic incentives for reducing automotive pollution in Northwest Queens for a study for the Queens borough president.

He is also an authority on noise pollution. Komanoff's monograph, *Drowning In Noise: Noise Costs of Jet Skis in America*, published by the Noise Pollution Clearinghouse, deconstructed the uniquely annoying noise from jet skis. He currently advises the lower Manhattan community group **Neighbors Against N.O.I.S.E.** in its campaigns against noise emissions from massive "telecom hotels."

### NYC activist and advocate for bicycling, pedestrians' rights and strategic pricing of automobile use

Komanoff brings to local advocacy a flair for translating data into human terms, familiarity with New York City's rich history, solidarity with the city's many cultures, and a passion for social justice.

Beginning in 1986, Komanoff "re-founded" and led the NYC-based advocacy organization, **Transportation Alternatives**. As volunteer (but virtually full-time) president, he forged T.A. into a distinctive force for non-motor transportation in the New York region and made it a model for grassroots transportation advocacy in dozens of U.S. cities. Under his leadership T.A. won a string of victories including defeat of a Midtown bike ban and expanded access to area bridges, roads and transit systems. *Bicycling* magazine acknowledged Komanoff's accomplishments by naming him a 1990 "Bicyclist of the Year."

After retiring as T.A. president in 1992, Komanoff later co-founded the pedestrian rights organization **Right Of Way**. He spearheaded the group's "street memorial" project that memorialized several hundred New York City pedestrians and cyclists and was honored in 2001 by *Industrial Design Magazine* for advancing socially conscious design. Komanoff's 1999 report *Killed By Automobile* drew on statistical analysis by Right Of Way volunteers of close to a thousand NYC pedestrian and cyclist fatalities. These projects helped provoke public policies and paradigm shifts (changing the focus from victim behavior to driver culpability) that have reduced fatal pedestrian accidents by 25 percent.

Through technical reports such as his *Road Relief* study for the Washington State group **Climate Solutions**, and in numerous articles, Komanoff has advocated for strategic re-pricing of motor vehicle use to curb traffic gridlock and raise municipal revenues. In 2002 he founded the **Bridge Tolls Advocacy**

**Project**, a campaign to generate popular and political support for tolling New York City's East River bridges. Through a Web site ([www.bridgetolls.org](http://www.bridgetolls.org)) and research reports, including a groundbreaking analysis of the effect of tolls on vehicle volumes and traffic flow, the project has documented the mobility benefits and essential fairness of East River tolls.

### **Books**

*The Bicycle Blueprint: A Plan to Bring Bicycling into the Mainstream in New York City* (Transportation Alternatives, 1993), chief editor, and co-author with Michele Herman et al.

*Power Plant Cost Escalation: Nuclear and Coal Capital Costs, Regulation and Economics* (Komanoff Energy Associates, 1981, republished by Van Nostrand Reinhold, 1982).

*Power Plant Performance: Nuclear and Coal Capacity Factors and Economics* (Council on Economic Priorities, New York, 1976).

*The Price of Power: Electric Utilities and the Environment* (Council on Economic Priorities, 1972, republished by M.I.T. Press, 1974), co-authored with Sandy Noyes and Holly Miller.

### **Book Chapters**

"Bicycling," in *Encyclopedia of Energy* (C.J. Cleveland, ed.), Elsevier Science, San Diego, 2004.

"Bicycle Transport in the US: Recent Trends and Policies" (with John Pucher), in *Sustainable Transport* (R. Tolley, ed.), Woodhead Publishing Ltd., Cambridge, England, 2003.

"Doing Without Nuclear Power," in *Accidents Will Happen: The Case Against Nuclear Power* (L. Stephenson, ed.), Environmental Action Foundation and Harper & Row, New York, 1979.

### **Major Reports**

*The Hours: Time Savings from East River Bridge Tolls* (Bridge Tolls Advocacy Project, New York, 2003).

*East River Bridge Tolls: Who Will Really Pay?* (Bridge Tolls Advocacy Project, New York, 2003).

*A Value-Pricing Toll Plan for the M.T.A.* (Tri-State Transportation Campaign, New York, 2003).

*Securing Power Through Energy Conservation and Efficiency in New York: Profiting from California's Experience* (Riverkeeper et al., 2002).

*Ending The Oil Age: A Plan to Kick the Saudi Habit* (Komanoff Energy Associates, New York, 2002).

*The Only Good Cyclist: NYC Bicyclist Fatalities — Who's Responsible?* (Right Of Way, New York, 2000), with Michael J. Smith.

*Drowning In Noise: Noise Costs of Jet Skis in America* (Noise Pollution Clearinghouse, Montpelier, VT, 2000), with Dr. Howard Shaw.

*The Price Of A Ticket: Racial Profiling and Highway Deaths in New Jersey* (Right Of Way, New York, 1999), with Michael J. Smith.

*Killed By Automobile: Death in the Streets in New York City 1994-1997* (Right Of Way, New York, 1999)

*Road Relief: Tax and Pricing Shifts for a Fairer, Cleaner, and Less Congested Transportation System in Washington State* (with Todd Litman and Doug Howell, 1998, <http://www.climatesolutions.org/>).

*Environmental Consequences of Road Pricing* (Energy Foundation, San Francisco, CA 1997).

*Crossroads: Highway-Finance Subsidies in New Jersey* (Tri-State Transportation Campaign, New York, with Margaret Sikowitz, 1995).

*Subsidies for Traffic: How Taxpayer Dollars Underwrite Driving in NY State* (Tri-State Transportation Campaign, New York, with Cora Roelofs, 1994).

*Citizen Action Plan* (Tri-State Transportation Campaign, New York, 1994), editor and lead author.

*Fiscal Fission: The Economic Failure of Nuclear Power — A Report on the Historical Costs of Nuclear Power in the United States* (Greenpeace, U.S.A., with Cora Roelofs, 1992).

*Environmental Benefits of Bicycling and Walking in the United States* (Federal Highway Administration, 1992, Part 15 of the *National Bicycling and Walking Study*, 1994, lead author).

*There They Go Again: A Critique of the AER/UDI Report on Future Electricity Adequacy Through the Year 2000* (Nat'l. Assoc. of State Utility Consumer Advocates, 1987, co-authored).

*Prometheus Bound: Nuclear Power at the Turning Point* (Cambridge Energy Research Associates, 1983), with I.C. Bupp.

### **Journal Articles**

*Injury Prevention*, "Safety in numbers: a new dimension to the bicycle helmet controversy?," December 2001 (letter).

*Journal of the American Medical Association*, "Elevated Blood Alcohol and Risk of Injury Among Bicyclists," May 16, 2001 (letter).

*Transportation Research "A"*, "Bicycling Renaissance in North America? Recent Trends and Alternative Policies to Promote Bicycling," 1999 (with John Pucher and Paul Schimek).

*Bicycle Forum*, "Restoring Cycling Habitat," No. 45, Summer 1997.

*Public Utilities Fortnightly*, "Predicting Nuclear Plant Capacity Factors," 1 December, 1994.

*Pace Environmental Law Review*, "Pollution Taxes for Roadway Transportation," Fall 1994.

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*Public Utilities Fortnightly*, "Assessing the High Costs of New Nuclear Power Plants," 11 October 1984.

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*Bulletin of the Atomic Scientists*, "U.S. Nuclear Plant Performance," November 1980.

*Journal of the American Pollution Control Association*, "Pollution Control Improvements in Coal-Fired Electric Generating Plants," Vol. 30, No. 9, September 1980.

*New York Review of Books*, "Doing Without Nuclear Power," Vol. 26, No. 8, 17 May 1979.

*New York Affairs*, "The Storm King Controversy," Vol. II, No. 1, 1974 (with Ken Semmel).

### **Newspaper Op-Ed Pieces / Magazine Articles**

*Providence (RI) Journal*, "Even Wind Power Can't Be Invisible," 6 June 2003.

*New York Daily News*, "Deficit Burden Must Be Shared" 6 March 2003.

*New York Daily News*, "Speed Up East River Bridge Tolling" 12 June 2002.

*Newsday*, "Giuliani Puts Brakes on Car Culture," 1 October 2001.

*Downtown Express*, "Ending the car-eat-bike world," 17-30 July 2001.

*New York Daily News*, "Yet Another Helmet Law? — Let's Skip It" 10 January 2001.

*New York Daily News*, "Too Many Cyclists Are Dying," 3 March 2000.

*The Washington Post*, "Refueling OPEC," 23 February 2000 (with Michael J. Smith).

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*Newsday*, "Should The L.I.E. Become a Toll Road?," 8 October 1995.  
*Crain's NY Business*, "Steep Gas Tax is One Way to Ease Fiscal Pain," 30 September 1991.  
*Newsday*, "Don't Convert Shoreham — Use Less Power," 4 December 1990.  
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*Wall Street Journal*, "Nuclear Crews Stretch Work, Up Costs," 19 March 1984.  
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*New York Review of Books*, "Doing Without Nuclear Power," 17 May 1979 (cover article).  
*The New York Times*, "Rights for Urban Bikers," 16 July 1978.

August 2004

**MICHAEL F. SHEEHAN**

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**Marital Status:** Married, two daughters

**Education:** J.D. (With Distinction) College of Law, University of Iowa, May 1987.  
Ph.D. (Economics) University of California at Riverside, June 1979  
Master of Arts (Economics)  
University of California at Riverside, June 1973  
Bachelor of Science (Economics, Magna Cum Laude)  
University of California at Riverside, June 1972

**Professional Licenses:** Admitted to the Iowa Bar (June 1987).  
Admitted to the Bar of the U.S. District Court for the Northern District of Iowa (July 1987).  
Admitted to the Oregon Bar (April 1988).  
Admitted to the Bar of the U.S. District Court for the District of Oregon (April 1990).  
Admitted to the Bar of the Ninth Circuit Court of Appeals (February 1992).

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**Teaching Fields:**

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State & Local Economic Development  
Natural Resources and Environmental  
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Operations Research (Quantitative  
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Law and Economics

**Research Interests  
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Land Use Planning Issues  
Public Utilities  
State & Local Economic Development  
Analysis of Risk and Environmental Safety  
Law and Economics

**Languages:** Spanish

**Articles in  
Academic  
Journals:**

"The Problem of Mass Evictions in Mobile Home Parks Subject to Conversion." 8 *Journal of Affordable Housing & Community Development Law* 231 Spring 1999.

"Why Ramsey Pricing is Wrong: The Case of Telecommunications Regulation: A Response to Harkenrider." *Journal of Economic Issues* (December 1993).

"Mobile Home Rent Control: Designing Local Regulations." *Land Use Law* 3 (November 1992) (With Roger Colton).

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"Monopoly, the Holding Company, and Asset Stripping: The Case of Yellow Pages." *Journal of Economic Issues*, (March 1992). (Equal authors with Evan White).

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"Institutionalists Before Regulatory Commissions: The Value of Doing in Thinking, Teaching, and Writing" *Journal of Economic Issues*, December 1988.

"Corporate Control and the Decapitalization of Subsidiary Corporations: The Looting of the Bangor and Aroostook Railroad." *Journal of Economic Issues*, September 1988.

"A New Basis for Conservation Programs for the Poor: Expanding the Concept of 'Avoided Costs,'" *National Clearinghouse Review*. June 1987 (with Roger Colton).

"Seven-Cum-Eleven: Rolling the Toxic Dice in the U.S. Supreme Court," *Boston College Environmental Affairs Law Review*. V. 14, #3 (1987) (with Roger Colton and Kathleen Uehling).

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"Plant Closings and the Community: The Instrumental Value of Public Enterprise," *American Journal of Economics and Sociology*, V. 44, #4, October 1985.

"Institutional Development of Water Supply in California: The Miller-Lux Water Monopoly Controversy," *Social Science Journal*, V. 22, No. 1, January, 1985 (with Barney Hope, equal authors).

"The Political Economy of Centralized Water Supply in California," *Social Science Journal*, V. 20, #2, April 1983 (with Barney Hope, equal authors).

"Land Speculation in Southern California: The Roles of Railroads, Trolley Lines and Automobiles," *The American Journal of Economics and Sociology*, V. 41, #2, April 1982.

"Land Speculation in Southern California: Energy Monopoly, Fiscal Crisis and the Future," *The American Journal of Economics and Sociology*, V. 42, No. 1, January, 1983.

"The Importance of the Burden of Proof in Environmental Regulation," *The Environmental Professional*, V. 4, 1982.

"Possibilities for Local Public and Cooperative Ownership of Short Line Railroads," *Transportation Research Record*, 802 (1981), (with Peter Fisher).

"Game Theory Analyses Applied to Water Resource Problems," *Socio-Economic Planning Sciences*, V. 15, #3, (1981), (Sheehan, Kogiku). Reprinted in Kiichiro Kogiku, ed., *Resource Allocation Models: Essays on the Management of Resources and the Environment*, Tokyo (Aoyama Gakuin University Press) 1990.

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"Reply to Discussion of 'Policy Problems Associated With Waterborne Asbestos,'" *The Water Resources Bulletin*, February 1983, V.19, #1. ("Discussion" by Michael Edson and Wm. Thompson in the same issue).

"Coordinating Public Utility Expansion, Industrial Siting and Pollution Control: A Workable Dynamic Programming Algorithm," *Socio-Economic Planning Sciences*, April 1977, V. 11, (Sheehan, Kogiku). Reprinted in Kiichiro Kogiku, ed., *Resource Allocation Models: Essays on the Management of Resources and the Environment*, Tokyo (Aoyama Gakuin University Press) 1990.

**Articles in Trade Publications:**

*Employment and Jobs: The Employment Impact of Federal Environmental Investments* National Commission for Employment Policy; Washington D.C. April 1995 (Research Report 95-02). With Skip Laitner and Marshall Goldberg.

"Utility Franchise Charges and the Rental of City Property," in *New Jersey Municipalities* December 1995, p.10ff.

"Cash for Clunkers Program Can Hurt the Poor." *State Legislatures* 33 (May 1993) (with Roger Colton).

**Manuals:**

**Valuation and Compensation Issues in Establishing a Public Power Utility** For the American Public Power Association (April 2003).

**Books:** **Oregon's Prevailing Wage Law** Fair Contracting Foundation: Portland, OR, 2000. (With Robert Lee and Lisa Nuss).

**On the Brink of Disaster: A State by State Analysis of Low-Income Natural Gas Heating Bills** (Flying Pencil Publications: Scappoose, OR 1994) (With Roger Colton).

**Articles in Books:** "The Abuse of Economic and Financial Power in the New Economy: Historical Patterns in the Creation of Modern Remedies." In Marc Tool and Dale Bush, eds., *Institutional Analysis of Public Policy*. NY: Kluwer 2003.

"Raising Local Government Revenues Through Utility Franchise Charges: If the Fee Fits Foot It," Reprinted in Freilich and Bushek, eds., *Exactions, Impact Fees and Dedications: Shaping Land-Use Development and Funding Infrastructure in the Dolan Era*, ABA, Chicago, 1995; p.233ff (With Roger Colton).

"Whose Goals and Whose Alternatives? How Bad Can a Private Goal Be and Still Define the EIS Under NEPA?," Presented to the National Park & Public Land Symposium, to be reprinted. (On the New World Mine proposal) 1995.

"Public Policy: Contributions of American Institutionalism," In Geoffrey Hodgson, Warren Samuels and Marc Tool, eds., *The Elgar Companion to Institutional and Evolutionary Economics*. Brookfield, VT: Edward Elgar, 1994.

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"A System Simulation Analysis of New Strategies for Long-run Cost Minimization in Wildfire Control." (With Kiichiro Kogiku, equal authors) chapter 4 in Kiichiro

Kogiku, ed., *Resource Allocation Models: Essays on the Management of Resources and the Environment*, Tokyo (Aoyama Gakuin University Press) 1990.

"An Application of Multi-criteria Decision-making to Multiple Use Planning in U.S. Forests." (With Kiichiro Kogiku, equal authors) chapter 5 in Kiichiro Kogiku, ed., *Resource Allocation Models: Essays on the Management of Resources and the Environment*, Tokyo (Aoyama Gakuin University Press) 1990.

"An Analysis of Davenport City Finances." Appendix 6B (p. 181-191) in G. Daniels & K. Gagala, *Labor Guide to Negotiating Wages and Benefits*, Reston (Prentice-Hall), 1985 (with Peter Fisher).

"The Struggle Between the Electric Utility Industry and Small Scale Power Producers: Law, Politics and Economics in State and Federal Policymaking." Chapter 6 in Max Neiman and Barbara Burt, eds. *The Social Constraints on Energy Policy Implementation*, Lexington, D.C. Heath & Co. 1983.

"Economism, Democracy, and Hazardous Wastes: Some Policy Considerations" in Kamieniecki, O'Brien and Clarke, *Controversies in Environmental Policy*, Albany, SUNY Press, 1986.

"Nonrenewable Resources and the Development of Arid Lands: A Planning Approach," in *Alternative Strategies for Desert Development and Management*, UNITAR, Pergamon Press, 1979 (Adam Rose, Michael Sheehan, Dale Hurd).

**Professional Administration:**

Chairman, Columbia County Solid Waste Advisory Committee, 1999-2002

Member, City of Scappoose, Parks and Recreation Advisory Committee, 2001-2002

Member, Board of Directors, Association for Evolutionary Economics 1999-2000

Member, City of Scappoose Urban Forestry Advisory Board, 1997-1999.

Managing Partner, Osterberg and Sheehan,  
Public Utility Economists, Scappoose, OR and Mount  
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Past Member, Research Advisory Committee, National  
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Past Member, Board of Editors, *Journal of Economic  
Issues*

Editor, *Reports on the Iowa Economy*.

Past-President, Association for Institutional Thought  
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**Professional &  
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Matthew Glasson Esq., Glasson, Grove and Sole,  
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Ellen Johnson, Oregon Legal Services,  
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David Girard, Columbia Legal Services,  
Seattle.

Michael Mullett, General Counsel, Citizens Action  
Coalition, Indianapolis, IN.

Dick Springer, Director, Fair Contracting Foundation,  
Portland, OR.

Mark Smith, Secretary-Treasurer, Iowa State  
Federation of Labor, Des Moines, Iowa.

Diane Curran, Harmon, Curran, Gallagher & Spielberg  
2001 "S" Street Suite 430, Washington, D.C. 20009-  
1125

**Utility-Related  
Law Practice**

*Ameritech Petition to the Indiana Utility Regulatory  
Commission for Further Deregulation. Cause 40849.  
1997-8. Representing Citizen Action Coalition of*

Indiana, AARP and United Seniors in Action.

*Petition of CAC et al for an Investigation into the Rates and Charges of Ameritech Indiana.* Cause 41058. Representing Citizen Action Coalition of Indiana, AARP and United Seniors in Action. November 1997.

*Indiana Bell Telephone dba Ameritech Indiana v. IURC et al* (Before the Indiana Court of Appeals). February 1998. Representing Citizen Action Coalition of Indiana, AARP and United Seniors in Action.

*Indiana Utility Regulatory Commission Investigation into All Matters Relating to Access Charge and Universal Service Reform.* Cause 40785. 1997-8. Representing Citizen Action Coalition of Indiana, AARP and United Seniors in Action.

*In the Matter of the Application of U.S. West for an Increase in Revenues* Docket UT 125 (Rate design) Before the Oregon Public Utility Commission. 1997-8. Representing AARP.

*In the Matter of the Petition of US West for a Ruling Clarifying the Effect of Rate Reductions on Refund Obligations* Docket UT 143 Before the Oregon Public Utilities Commission. Representing AARP. 1997-8.

*US West Communications, Inc. v. Oregon Public Utilities Commission,* CA A101358, Before the Oregon Court of Appeals. Representing the Citizens Utility Board of Oregon and AARP. August 1998.

**Practice Before  
Courts  
(Economics):**

*Estate of Gregory Allen Haggard v. D.W.'s Spotting Service,* No. CV02-01349 (Umatilla County). Analysis of economic damages. 2003.

*Pamela Settlegoode v. Portland Public Schools,* No. CV00-313 ST, U.S. District Court for the District of Oregon. Written and oral testimony on economic damages. 2001.

*In the Matter of Columbia Grain, Inc. v. ILWU, et al,* Case

No. 99 1502 MA, U.S. District Court for the District of Oregon. Written testimony on the economics of Portland's grain shipment industry. 2000

*Jane Largent Alfrey, personal representative of the Estate of Thomas Martin Alfrey v. Joseph Crabtree, Warden FCI Sheridan, et al.* No. \_\_\_\_\_ U.S. District Court for the District of Oregon. Preparation of discounted present value of lost earnings report. On behalf of the Estate. 1999.

*Shiprack v. Keisling, Secretary of State of the State of Oregon* No. 98C-17750 Review of statistical sampling methodology for signature count to qualify initiatives. Fall 1998.

*Aspenwall et al v. Parker NW Paving*, Circuit Court for the County of Multnomah. Calculation of gross value of sand and gravel deposits. 1998.

*Crostic v. Golden Pacific Homes*, Multnomah County . Circuit Court Action. Consumer Fraud. Before an arbitrator. Calculation of present value of damages. May 1998.

*Green v. Sunpointe Associates*, Civil Action No. C96-1542C (U.S. Dist. Ct. Western District of Washington). Fair Housing Act Class Action. Calculation of damages. 1997.

*Garneau v. City of Seattle*, Federal District Court. "Seattle's Low-Income Tenant: Relocation Assistance Ordinance: A Review of Professor Heyne's Economic Analysis." On behalf of Evergreen Legal Services and the City of Seattle in defense of the TRA0. January 1995.

*Pacific Northwest Bell v. Eachus et. al.* (OPUC), Multnomah County Circuit Court. Affidavits & testimony in support of CUB's resistance to (1) Bell's request for a stay of a commission rate reduction order, and (2) Bell's request for a protective order. On behalf of Oregon Citizens' Utility Board. (Spring 1990).

*Azul Pacifico v. City of Los Angeles*. Federal District

Court for the Central District of California. Witness statement (33 pages) and oral testimony on the economics of mobilehome rent control. On behalf of the City of Los Angeles. (January 1990).

*IN RE: John & Reta Martin: Chapter 12 Bankruptcy.* "Materials in Support of an Analysis of the Appropriate Interest Rate Under 11 USC Section 1225(a)(5);" and "Moody's Corporate Bond Composite: An Analysis in Light of 11 USC 1129(b)." Fixed interest rate determination in support of plan confirmation. Written reports. April 1987. Bankruptcy Court (ND, Iowa).

*IN RE: De Los and Donna Martins:* "Materials in Support of an Analysis of the Appropriate Interest Rate Under 11 USC Section 1129(b)(2)." Fixed interest rate determination in support of cramdown. Written report. April 1987. Bankruptcy Court (ND, Iowa).

*IN RE: Paul and Gretchen Pothoven:* "Materials in Support of an Analysis of the Appropriate Interest Rate Under 11 USC Section 1129(b)(2)." Fixed interest rate determination in support of cramdown. Written report plus testimony. April 1987. Bankruptcy Court (SD, Iowa).

"An Economic Analysis of Rules Adopting 6 Percent and \$6000 Limits on Excludable Assets Essential for Self-Support in Determining Medicaid Eligibility." A report (affidavit) prepared for Legal Services Organization of Indiana. February 1987.

*IN RE: Merlin & Helen Theisen:* "Materials in Support of an Analysis of the Appropriate Interest Rate Under 11 USC Section 1129(b)(2)." Fixed interest rate determination in support of cramdown. Written report. February 1987. Bankruptcy Court (ND, Iowa).

*IN RE: L.C. & Gladys Cole: Chapter 11 Bankruptcy.* "Materials in Support of an Analysis of the Appropriate Interest Rate Under 11 USC Section 1129(b)(2)." Fixed interest rate determination in support of cramdown. Written report plus testimony. February 1987. Bankruptcy Court (ND, Iowa).

*IN RE: Donald & Sharalee Kurtenbach:* Chapter 11 Bankruptcy. "Materials in Support of an Analysis of the Appropriate Interest Rate Under 11 USC Section 1129(b)(2)." Fixed interest rate determination in support of cramdown. Written report in lieu of testimony. February 1987. Bankruptcy Court (ND, Iowa).

*IN RE: Manta C. Noe and John & Carol Noe:* Chapter 11 Bankruptcy. "Materials in Support of an Analysis of the Appropriate Interest Rate Under 11 USC 1129(b)(2)." Fixed interest rate determination in support of cramdown. Written report plus testimony. February 1987. Bankruptcy Court (ND, Iowa).

*IN RE: Leland & Evelyn Eganhouse:* Chapter 11 Bankruptcy. "The Use of the Farm Profitability Index to Index Annual Payments Under the Reorganization Plan." Written report. July 1986.

*IN RE: Robert & Joann Pestka:* Chapter 11 Bankruptcy. "Materials in Support of an Analysis of the Appropriate Interest Rate Under 11 USC Section 1129(b)(2)." Fixed interest rate determination; written report. July 1986.

*IN RE: Leland & Evelyn Eganhouse:* Chapter 11 Bankruptcy. "Materials in Support of an Analysis of the Appropriate Interest Rate Under 11 USC Section 1129(b)(2)." Fixed interest rate determination; written report. July 1986.

*IN RE: Wilbert Wuebker.* Chapter 11 Bankruptcy. "Materials in Support of an Analysis of the Appropriate Interest Rate Under 11 USC Section 1129(b)(2)." Fixed interest rate determination; written report. May 1986.

*The Maine Association of Independent Neighborhoods, et. al. and Nancy Haggan v. Michael Petit* Docket No. 83-0360-B, The U.S. District Court for the District of Maine. "An Economic Analysis of Rules Adopting 6 Percent and \$6000 Limits on Excludable Assets Essential for Self-Support in Determining Medicaid Eligibility." A report prepared for Pine Tree Legal Assistance, Inc. of Augusta, Maine. May 1986. (Favorable Decision: U.S. Dist. Ct. D. Maine, April 23, 1987. Docket No. 85-0174-B).

*IN RE: Paul Kaufman:* Chapter 11 Bankruptcy. "Materials in Support of an Analysis of the Appropriate Interest Rate Under 11 USC Section 1129(b)(2)." Fixed interest rate determination; written report. April 1986.

*IN RE: John & Marie McAllister:* Chapter 11 Bankruptcy. "Materials in Support of an Analysis of the Appropriate Interest Rate Under 11 USC Section 1129(b)(2)." Fixed and variable interest rate determinations; written report plus testimony. March 1986.

*IN RE: Byron & Connie Greiman:* Chapter 11 Bankruptcy. "Materials in Support of an Analysis of the Appropriate Interest Rate Under 11 USC Section 1129(b)(2)." Fixed interest rate determination; written report. March 1986.

*IN RE: Cyrus & Annette Hopkins:* Chapter 11 Bankruptcy. "Materials in Support of an Analysis of the Appropriate Interest Rate Under 11 USC Section 1129(b)(2)." Fixed interest rate determination; written report plus testimony. March 1986.

*IN RE: Daniel & Helen Wolf:* Chapter 11 Bankruptcy. "Materials in Support of an Analysis of the Appropriate Interest Rate Under 11 USC Section 1129(b)(2)." Fixed interest rate determination in support of the debtors successful cramdown effort. Written report plus testimony. February 1986.

**Practice Before  
Regulatory  
Commissions  
(Economics):**

**Petition of PSI Energy for Authority to Increase Rates** Cause No. 42359, before the Indiana Utility Regulatory Commission. Expert written testimony on the issues of the rate treatment of trackers, affiliated transaction issues, holding company issues, risk and ROE, and executive compensation. On behalf of the Citizens Action Coalition of Indiana. 2003.

**IN RE: Iowa Telecommunications Services, d/b/a/ Iowa Telecom Proposal for Modification of Price Regulation.** Docket No. RPU 02-4. Expert written testimony on the issue of targeted deregulation of

exchanges and predatory practices. On behalf of the Iowa Association of Municipal Utilities. Summer 2002.

**IN RE: Interstate Power and Light.** Docket No. RPU 02-3. Before the Iowa Utilities Board. Expert written testimony on the issue of mergers and rate averaging. On behalf of the City of Dubuque and others. Summer 2002.

**In the Matter of Pacific Gas & Electric (Diablo Canyon Nuclear Power Plant Nos. 1 and 2).** Declaration and assistance with preparation of Contentions relating to the application to establish a high level nuclear waste facility at Diablo Canyon. On behalf various local groups. July 2002.

**IN RE: Iowa Telecommunications Services, Inc., Petition for Deregulation.** Docket No. INU-01-1. Before the Iowa Utilities Board. Expert written testimony on the issues of "effective competition," deregulation, and the remedies for anti-competitive abuses. On behalf of the Iowa Association of Municipal Utilities, October 2001.

**Northern Indiana Public Service Company, Investigation into Electric Rates and Charges.** Cause No. 41746. Before the Indiana Utility Regulatory Commission. Expert written testimony on the issue of fair value and fair return. On behalf of the Indiana Office of the Utility Consumer Counselor. June 2001.

**In the Matter of Private Fuel Storage, LLC for a License for an Independent Spent Fuel Storage Installation** Docket 72-22-ISFSI, ASLBP No. 97-732-02-ISFSI. Before the Nuclear Regulatory Commission. Expert written testimony on the issues of financial assurance, alternatives, no action, and NEPA. On behalf of the State of Utah. 1999-2001.

**In the Matter of Investigation and Hearing on Possible Reduction in Rates and Charges of Entergy New Orleans, Inc. for Electric and Gas Service in New Orleans** Docket No. UD-97-1. Before the New Orleans City Council. May-June 1997. Expert written testimony on the franchise agreement. On

behalf of the Alliance for Affordable Energy.

**Petition of Northern Indiana Public Service Company for Approval of a Natural Gas Alternative Regulatory Plan.** Cause No. 40342. Before the Indiana Utility Regulatory Commission. Expert written testimony on the proposal. On behalf of Citizens Action Coalition of Indiana. February 1997. (Settled).

**With Respect to Setting Rates Pursuant to Franchise for the Forest Grove Transfer Station.** Before the METRO Council (Portland, Oregon). Preparation of studies and other materials. On behalf of the Metro Staff. 1996-7.

**Hydro Resources Inc. Application to Construct and Operate the Crownpoint Uranium Solution Mining Project at Crownpoint, NM,** Before the U.S. Nuclear Regulatory Commission. Docket No. 40-8968. 1997. Expert written testimony on the economics of the proposal (issues related to financial capability, cost benefit analysis and need). On behalf of ENDAUM and the Southwest Research and Information Center.

**In Re Indianapolis Power and Light Cause No.39938.** Written rebuttal testimony on rate base, rate of return, and estimation of plant value. Before the Indiana Utility Regulatory Commission. On behalf of Citizens Action Coalition of Indiana. June 1995.

**In Re Indianapolis Power and Light Cause No.39938.** Written testimony on rate base, rate of return, and estimation of plant value. Before the Indiana Utility Regulatory Commission. On behalf of Citizens Action Coalition of Indiana. April 1995.

**Petition of PSI Energy, Inc. for Authority to Raise Rates Cause 39584** Written testimony on utility incentive programs. Before the Indiana Utility Regulatory Commission. On behalf of Citizens Action Coalition of Indiana. July 1994.

**In Re Kauai Electric Division Docket No. 94-0097.** Written testimony on utility rate design, and low-income and conservation programs. Before the Hawaii Public Utility Commission. On behalf of the Legal Aid Society

of Hawaii. March 1995.

**Economic Development and Incentive Tariffs Rulemaking Supplemental comments on the efficacy and design of economic development tariffs.** Before the Public Utility Commission of Texas Project No. 11434. On behalf of the Texas Ratepayers' Organization to Save Energy. January 1994.

**In Re Request for Increased Rates for Denver Water Comment and Exhibits on Late Payment Fees, Low-income conservation programs, Rate Design and Rate Shock.** Prepared on behalf of ACORN. January 1994.

**Economic Development and Incentive Tariffs Rulemaking** Prepared comments on the efficacy and design of economic development tariffs. Before the Public Utility Commission of Texas Project No. 11434. On behalf of the Texas Ratepayers' Organization to Save Energy. May 1993.

**In the Matter of the Application of MAUI ELECTRIC COMPANY, LTD. for Approval of Rate Increases and Revised Rate Schedules and Rules.** Written testimony on the issues of conservation, low-income rate design, late payment charges and rate shock. Before the Hawaii Public Utilities Commission Docket No. 7000 on behalf of Legal Aid Society of Hawaii. November 1992.

**Petition of PSI Energy, Inc. for Approval of its Phase Environmental Compliance Plan.** Prepared written testimony on the utility's proposed incentive plans and allowance banking proposal. Before the Indiana Utility Regulatory Commission, Cause No. 39346. On behalf of the Citizens Action Coalition of Indiana. September 1992.

**Comments: In the Matter of the Application of Randy Heller for a Major Partition and Variance in the Rural Residential-5 Zone.** Written comments on zoning issues. Before the Columbia County, Oregon Board of Commissioners on behalf of the Scappoose-Spitzenberg CPAC. May 1991.

**In the Matter of the Investigation into the Portland Extended Area Service Region Docket UM-261.** Supplemental written testimony on the issues of rate design and cross subsidization. Before the Oregon Public Utility Commission on behalf of the Citizens' Utility Board of Oregon. February 1991.

**In the Matter of: An Adjustment of Gas and Electric Rates of Louisville Gas and Electric Company.** Case No. 90-158. Prepared written testimony on the issues of rate design, cost of service, and residential conservation programs. Before the Kentucky Public Service Commission on behalf of the Attorney General of Kentucky. November 1990.

**In the Matter of the Investigation into the Portland Extended Area Service Region. Docket UM-261.** Prepared written testimony on the issues of rate design, cost of service, and cross-subsidization. Before the Oregon Public Utility Commission on behalf of the Citizens' Utility Board of Oregon. October 1990.

**In the Matter of: Rate Adjustment of the Western Kentucky Gas Company.** Case No. 90-013. Prepared written testimony on the issues of rate design, cost of service, and residential conservation programs. Before the Kentucky Public Service Commission on behalf of the Attorney General of Kentucky. May 1990.

**In the Matter of: Notice of Adjustment of Rates of Kentucky-American Water Company.** Case No. 89-348. Prepared written testimony on the issues of rate design, cost of service, rates charges for public fire hydrants, and residential conservation. Before the Kentucky Public Service Commission on behalf of the Lexington-Fayette Urban County Government and the Office of the Attorney General of Kentucky. March 1990.

**In the Matter of the Investigation into the Revenue Requirements and Rate Spread of Pacific Northwest Bell Telephone Company, d/b/a US West Communications, Inc. Docket UT-85.** Direct written testimony on telecommunications rate design. Before

the Oregon Public Utility Commission on behalf of the Citizen's Utility Board of Oregon. May 1989.

**IN RE: City of Sheldon v. Iowa Public Service Company.** Docket NO. SPU-88-7. Petition of the City of Sheldon for a certificate to establish a municipal electric utility. Expert written testimony on valuation principles and associated regulatory issues. Before the Iowa Utility Regulatory Board. On behalf of the City of Sheldon. March 1989.

**In the Matter of the Investigation of Cost-of-Service Studies and the Rate design of ALASCOM, Inc.** Docket U-87-25. Expert written testimony on intrastate toll rate design and issues relating to the provision of telecommunication services for the hearing impaired. Before the Alaska Public Utilities Commission. On behalf of the Alaska Consumer Advocacy Program. February 1989.

**IN RE: Docket No. DPU 86-36. Investigation into the Pricing and Ratemaking Treatment to be Afforded New Electric Generating Facilities Which Are Not Qualifying Facilities.** Expert written testimony on the regulatory treatment of conservation and demand side management programs. Before the Massachusetts Department of Public Utilities, on behalf of the Hampshire Community Action Commission (National Consumer Law Center). June 1988.

**IN RE: Docket No. DPU 87-280. Western Massachusetts Electric Company.** Expert written testimony on the cost effectiveness and economic justification of certain demand side management pilot programs. Before the Massachusetts Department of Public Utilities, on behalf of the Hampshire Community Action Commission (National Consumer Law Center) March 1988.

**IN RE: Public Service Corporation of Indiana.** Cause 37414 (Application to reduce rates). Expert written testimony on the issue of whether PSI's Marble Hill-related financial emergency continued, and whether PSI should be allowed to temporarily reduce rates via certain changes in accumulated tax accounting. Before

the Indiana Utility Regulatory Commission, on behalf of the Citizens Action Coalition and the City of Terre Haute. April 1988.

**IN RE: Public Service Corporation of Indiana.** Cause 37414-S1 (Investigation to determine whether existing rates ought to be reduced). Prepared written testimony on the issue of the financial condition of PSI. Before the Indiana Utility Regulatory Commission on behalf of the Citizens Action Coalition and the City of Terre Haute. April 1988.

**IN RE: New York State Electric and Gas Corporation.** Cases 29541 and 29542. Expert written testimony on cost allocation and "economic development" rates. Before the Public Service Commission of the State of New York. July 1987. On behalf of the Public Utility Law Project. Albany, New York.

**IN RE: Petition of CAC, City of Terre Haute, et al for a Reduction in the Retail Electric Rates of Public Service Company of Indiana.** Cause No. 38411 Affidavit dealing with excess earnings. October 1987.

**IN RE: Application of IBP, Inc. for a Water Withdrawal Permit for its Proposed Manchester Plant.** Draft Water Use Permit No. 14,808. "Comments on the Public Health Impacts of Radium Contamination in the Jordan Aquifer." Before the Iowa State Department of Natural Resources. September 1987. On behalf of a coalition of local farmers and environmentalists.

**IN RE: Western Massachusetts Electric Company.** Docket No. D.P.U. 86-280. Expert written testimony on the economics of conservation investments targeted to low income and 'bad debt' customer subgroups. Before the Massachusetts Department of Public Utilities. March 1987. On behalf of the Hampshire Community Action Commission (National Consumer Law Center).

**IN RE: Iowa Gas Company Request for Increased Rates.** Docket No. RPU-85-22. Expert written testimony on rate design, interruptible rates for industrial users, and the allocation of franchise/user fee

expenses. Before the Iowa State Commerce Commission. January 1986. On behalf of the City of Des Moines.

**IN RE: Proposal to Set Maximum Rates Small Loan Companies Are Allowed to Charge Pursuant to Iowa Code Section 536.13.1(B) and 536.13(2).** Docket No. ARC 5900. Before the Iowa State Banking Board. Written testimony opposing the proposal to increase the maximum rates to 36% per annum. October 1985. On behalf of the Iowa City Ratepayers Association.

**IN RE: Union Electric Company Request for Increased Rates.** Docket No. RPU-85-9. Expert written testimony on the question of whether the Callaway Nuclear Facility was a cost effective source of power to Iowa, and analyzing the impact of the proposed rates on economic development in Iowa. Before the Iowa State Commerce Commission. July 1985. On behalf of the Cities of Keokuk and Ft. Madison and Lee County, Iowa.

**IN THE MATTER OF: Application of Duke Power Company for Approval of a General Increase in Electric Rates and Charges.** Docket No. 85-78-E. Technical appendices in support of the expert written testimony of David E. Osterberg. Before the South Carolina Public Service Commission. July 1985. On behalf of the Consumer Advocate of the State of South Carolina.

**IN RE: Rules Regarding Permissible Additional Charges for Involuntary Unemployment Insurance Premiums.** Docket No. ARC 5249. Before the Administrator of the Iowa Consumer Credit Code. Written testimony on the impact of this type of insurance on consumers. February 1985.

**IN THE MATTER OF: Union Electric Company.** Docket No. 84-0109. Expert written testimony comparing the cost of power from Callaway Nuclear Station to other sources of power; utility planning; and the treatment of excessive costs. Before the Illinois State Commerce Commission. September 1984. For the Governor's Office of Consumer Services (Illinois).

**Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of Niagara Mohawk Power Corporation: Case Nos. 28798, 28799, 28800.** Before the Public Service Commission of the State of New York. Expert written testimony on the disposition of the savings from the availability of federal hydroelectric power on the Niagara-Mohawk system. September 1984. For the Public Utility Law Project (New York).

**IN RE: Northwestern Bell Telephone Company.** Docket No. RPU-84-7. Expert written testimony on discriminatory allocation of costs, cost causation, and the jurisdictional treatment of jurisdictionally unnecessary costs. Before the Iowa State Commerce Commission. June 1984. For the coalition for Fair utility Rates and the ISU Government of the Student Body.

**IN RE: Wisconsin Power and Light Company.** Docket No. 6680-UR-14. Expert written testimony on rate of return. June 1984. Before the Wisconsin Public Utilities Commission. For the Citizens Utility Board.

**IN RE: Young Radiator.** NPDES Permit 04-07-1-02. Report submitted on the sufficiency of the terms of the proposed permit. Before the Iowa Department of Water, Air and Waste Management. April 1984. For: Local Citizens, Centerville, Iowa.

**IN RE: Peoples Natural Gas Company, Division of InterNorth Inc.** Docket No. RPU-83-20. Expert written testimony on conservation funding and the regulatory treatment of excess capacity. Before the Iowa State Commerce Commission. October 1983. For the Iowa Ratepayers Association.

**IN RE: Iowa Electric Light and Power Company.** Docket No. RUP-83-23 (TF-83-264). Expert written testimony on utility planning and excess capacity. Before the Iowa State Commerce Commission. September 1983. For the Iowa Ratepayers Association.

**IN RE: Iowa-Illinois Gas and Electric Company.** Docket No. RPU-83-22. Supplemental written

testimony on the issue of the prudence of company management. Before the Iowa State Commerce Commission. October 1983. For the Iowa Ratepayers Association.

**Iowa Power and Light Company; Iowa Southern Utilities Company; and Iowa Illinois Gas and Electric Company.** Docket No. RPU-82-39. Expert written testimony on the natural gas purchasing practices of the above listed utilities. Before the Iowa State Commerce Commission. September 1983. For the Iowa Ratepayers Association.

**In the Matter of the Application of Otter Tail Power Company for Authority to Establish Increased Rates for Electric Service in South Dakota.** Docket No. F-3418. Expert written testimony before the South Dakota Public Utilities Commission on the issue of rate design (the OSL Rate). July 1983. For the Citizens Organized for the Purpose of Equality (COPE), Sisseton, South Dakota.

**IN RE: Petition for a Special Exception for the Construction of a High Voltage Transmission Line within Iowa City, Iowa.** Expert written testimony on utility planning. Before the Iowa State Commerce Commission. November 1982. For the Iowa City Ratepayers Association.

**Prepared written testimony in Docket No. FCU-82-5 before the Iowa Commerce Commission on the subject of the regulatory treatment of winter utility shutoffs.** December 1982. Citizens/Labor Energy Coalition.

**IN RE: Rate Making Treatment of Excess Electric Utility Generating Capacity.** Docket No. RMU-82-4. Expert written testimony on rate making treatment of excess electric utility generating capacity. Before the Iowa State Commerce Commission. November 1982, p. 27. Community Action Research Group.

**IN RE: Petition for Franchise of 4.2085 Miles of 72,000 Volt Transmission Line in Clayton County, Iowa.** Docket No. E-19540. Supplementary written testimony on utility planning and forecasting. Before

the Iowa State Commerce Commission. April 1982.

**IN RE: Iowa Public Service Company.** Docket No. RPU-81-8. Supplemental direct written testimony on rate of return, excess capacity and utility planning. Before the Iowa State Commerce Commission. September 1981, p. 14. Woodbury County Community Action Agency and Citizens/Labor Energy Coalition.

**IN RE: Iowa-Illinois Gas and Electric Company.** Docket No. RPU-81-5. Expert written testimony on utility planning and forecasting. Before the Iowa State Commerce Commission. September 1982. On behalf of Iowa Planners Network.

**IN RE: Iowa Public Service Company.** Docket No. RPU-81-8. Expert written testimony on rate of return and other issues. Before the Iowa State Commerce Commission. August 1981. On behalf of Woodbury County Community Action Agency and Citizens/Labor Energy Coalition.

**IN RE: Iowa Power and Light Application for a Revision of Rates.** Docket Nos. RPU-78-23 and RPU-80-36. Expert written testimony on rate design. Before the Iowa State Commerce Commission. February 1981. On behalf of the Citizens/Labor Energy Coalition.

**IN RE: Iowa State Commerce Commission Rules Regarding Rates for Cogeneration and Small Power Production.** Statement of David Osterberg and Michael F. Sheehan on rates for Small Power Producers under Section 210 of the Public Utility Regulatory Policies Act of 1978. Before the Iowa State Commerce Commission. January 1981. On behalf of Continental Hydro Corporation.

**IN RE: Iowa Electric Light and Power's Request for Authorization to Construct a 650 MW Coal-fired Generating Plant at Panora, Iowa.** Written testimony providing a critique of certain aspects of the applicant's demand forecasting methodology (with David Osterberg). Before the Iowa State Commerce Commission. November 1980.

**IN RE: Rules Requiring the Filing of Certain "Cost-**

**of-Service" Information with the Iowa State Commerce Commission.** Written testimony evaluating the Rules proposed by Commission Staff. RMU-80-1. Before the Iowa State Commerce Commission. Legal Services and Citizens/Labor Energy Coalition.

**IN RE: Rate Increase Request by Iowa Power and Light.** Written testimony evaluating: 1) the economic rationale for special rates for certain electric appliances; 2) the justification for proposed changes in customer charges; and 3) various alternative block rates. Before the Iowa State Commerce Commission. March 1981.

**Service on  
Government  
Commissions &  
Committees:**

Columbia County Solid Waste Advisory Committee. 1998-Present. Columbia County, Oregon.

Conservation Acquisition Council, Columbia River People's Utility District (Columbia County, Oregon). 1992-6.

AT&T National Consumer Advisory Panel (1990-1995)

Research Advisory Committee, National Regulatory Research Institute, Ohio State University, Columbia, Ohio. 1990-1993.

Citizen Planning Advisory Commission, Columbia County, Oregon 1990-Present

Rate Advisory Committee, Columbia River Peoples' Utility District (Columbia County, Oregon). 1990-6.

Community Energy Management Advisory Board, Energy Policy Council (State of Iowa) 1984-87.

Iowa City, Iowa: City Franchise Commission (1983-4).

**Recent Studies:**

**Fair Housing Plan: An Analysis of Impediments and Strategies to Address Them** Prepared for the Office of Community Development of Washington County, Oregon, and the City of Beaverton, for presentation to

HUD. July 2004. With Roger Colton.

**Project Labor Agreements in Iowa: An Important Tool for Managing Complex Public Construction Projects** Prepared for the Iowa Policy Institute. With Ralph Scharnau (In Press January 2004).

**A Survey by Oregon Counties of Transfer Station Practices and Arrangements** For the Columbia County Solid Waste Advisory Committee. 2003.

**A Survey of State Prevailing Wage Practices** Prepared for the Fair Contracting Foundation for Presentation to BOLI. December 2002.

*Funding a Selective Increase for Assistant and Senior Assistant Attorneys General: A Review of the DOJ Budget.* Prepared for the Oregon Association of Justice Attorneys, June 2001 (in support of collective bargaining).

*Review of the Supply of Aggregate in Columbia County, Oregon,* Prepared for Transwestern Aviation for presentation to the Columbia County Board of Commissioners. November 2000

*Bull Run Versus Willamette River Water: A Review of the Costs of Alternatives for Wilsonville and Tigard* Prepared for Wilson and Tigard Citizens for Safe Water. August 1999.

*BOLI's Treatment of Laborer, Truck Driver and Carpenter Classifications in its 1999 Prevailing Wage Determination* Prepared for the Fair Contracting Foundation, Portland, OR. April 1999.

*Method for Calculating Gross Value of a Sand and gravel Deposit in the Ground* Draft March 1999

*Principles for Valuing a Municipal Distribution Utility in 1998* APPA May 1998.

*An Investigation into the Elements of Regulatory Success and Failure: Ten Studies* Prepared on behalf of METRO (the three county planning agency for the Portland, Oregon region). 1997.

*Fair Housing Plan: Analysis of Impediments and Strategies to Address Them* (With Roger Colton) August 1996. On behalf of Washington County and the City of Beaverton, Oregon.

*Lone Star's Plan to Strip Mine Columbia County* Formal economic study presented to the Columbia County Planning Commission in In Re Applications PA 4-96, 5-96, 6-96 for map amendments and zone changes from agriculture and industry to surface mining. On behalf of the Scappoose-Spitzenberg CPAC. November 1996.

In the Matter of the Application of WEBCO for Approval of the Preliminary Plat for the Brookfield Subdivision. Before the City of St. Helens, Oregon. Study presented on behalf of the Friends of Good Planning. November 1996.

*The Comparative Economics of Nebraska Revised Statutes §70-1010* A study dealing with the statutory standard for compensating rural electric providers when municipal electric utilities expand to keep pace with urban growth. Presented to the Natural Resources Committee of the Nebraska Legislature. October 1996.

*Home-Based Enterprise in Oregon: Improving Local Regulation of an Important Economic Asset* Winner of the Cascade Policy Institute's 1996 Oregon Better Government Competition. September 1996.

*Fiscal Stability and Risk Management Over Time: Planning for Reasonable Fund Balances and Reserves* January 1996.

*County Sponsored Water Districts to Facilitate the Construction of High Density Rural Subdivisions: An Evaluation* Presented to the Columbia County Board of Commissioners on behalf of the Scappoose-Spitzenberg CPAC. November 1995.

*Fair Market Value for the Franchise: Law and Economics of Franchise Renewal in Louisville* On behalf of the Legal Aid Society of Louisville, KY. March 1995.

*Transfer Stations, Curbside Haulers, Landfills: Survey of Costs* June 1996.

*Comparison of Regulatory Standards for Rate Regulation of Transfer Station Franchisees* December 1995

*Environment and Jobs: The Employment Impacts of Federal Environmental Investments* National Commission for Employment Policy: Washington, D.C., April 1995. Research Report No. 95-02. With Skip Laitner, Marshall Goldberg, and Marc Baldwin.

*Growing Cities: Valuation and Compensation Issues in Dealing With Rural Electric Co-ops*, Prepared on behalf of the American Public Power Association. (With Roger Colton and Richard Cvarak) August 1995.

*An Assessment of Low-Income Energy Needs in Washington State* Prepared on behalf of the Washington State Department of Community Development. November 1993. pp.319. (With Roger Colton, Skip Laitner, Adrienne Quinn, Scott Foster, and Gregory Holmes).

*Economic Development Utility Rates: Targeting, Justifying, Enforcing* November 1993 (With Roger Colton).

*Environmental Site Assessment: Leasehold Site for New Library, Government Block, Scappoose, Oregon* Prepared on behalf of the Scappoose Public Library District. October 1993.

*Of Sunflowers and Dandelions: A Comparative Analysis of Low-Income Rate Discounts* May 1993.

*Affordable Housing and Section 8 Utility Allowances: An Evaluation and a Proposal for Action. Part I: Adequacy of Annual Allowances* March 1993 (With Roger Colton).

*Affordable Housing and Section 8 Utility Allowances: An Evaluation and a Proposal for Action. Part II: Adequacy of Monthly Allowances* March 1993 (With Roger Colton).

*Affordable Housing and Section 8 Utility Allowances: An Evaluation and a Proposal for Action. Part III: Individualized Relief* March 1993 (With Roger Colton).

*Major Telecommunications Problems for Consumers: An Agenda for Consumer Advocates Prepared for TURN.* November 1992.

*Valuation and Compensation Issues in Establishing a Municipal Electric Operation: A Manual for Professional Staff* Prepared for the American Public Power Association (Draft: May 1992).

*Financial Plan and Review of Options* Prepared on behalf of the Scappoose (Oregon) Public Library District. April 1992.

*Externalities and Least Cost Planning in Wisconsin: The Question of Job Impacts* Prepared for Economic Research Associates, Eugene, Oregon. March 1992.

*The Impact of the Clean Air Act Amendments of 1990 on Missouri* Prepared for Economic Research Associates, Eugene, Oregon. September 1991.

*Energy Efficiency, Economic Development and the Funding Problem* Prepared for Economic Research Associates, Eugene, Oregon. November 1991.

*Energy and Economic Development: Tuning Agency Powers to New Opportunities* Prepared for Economic Research Associates, Eugene, Oregon, 1991.

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*Elements of a Standard Minimum Program for Low Income Ratepayers in Utility Rate Cases.* A discussion paper for general circulation. May 1990.

*Incentive Rates for Large Manufacturing Concerns: A Review and a Proposal.* Prepared for the Texas Department of Agriculture. November 1989.

*Regional Citizen Advisory Groups to Multistate Utility Holding Companies: A Public Interest Review.*

Prepared as part of a Michigan Divestiture Review Fund study of the pros and cons of an Ameritech Citizen Advisory Group. March 1989.

*Making Allies of Law, Labor and the Environment: An Exposition for Labor Lawyers.* Prepared for the Lawyers Coordinating Committee of the AFL-CIO. (With Matthew Glasson and Peggy Hillman). May 1989.

*Issues in Demand-Side Management.* Prepared for the Department of Public Service, State of Vermont. February 1989.

*The Problem of Mass Evictions in Mobilehome Parks Subject to Conversion.* Prepared for Oregon Legal Services for presentation to the City Council of the City of Forest Grove, Oregon. February, 1989.

*The Monopolies' Campaign to Fleece POTS: Can Plain Old Telephone Service Be Saved?: Some Recommendations.* Prepared for the Citizens Action Coalition of Indiana. October 1988.

*An Analysis of Davenport City Finances (Revised).* Prepared for the Davenport Association of Professional Firefighters, for presentation to an Iowa Public Employment Relations Board arbitrator. Davenport: September, 1988.

*An Analysis of Davenport City Finances (Revised).* Prepared for the Union of Professional Police, for

presentation to an Iowa Public Employment Relations Board arbitrator. Davenport: September, 1988.

*The Problem of Political and Administrative Corruption in State Economic Development Programs.* Prepared for the Association for Ethical Government. July 1988.

*Of Ratebases, Subscriber Line Charges, and Other Strange Beasts: The Public Interest Economist as Ms. Goodwrench in Energy/Utility Litigation.* Prepared for the National Consumer Law Center for presentation to the NLADA Conference, Berkeley, California. July 1988.

*An Analysis of Davenport City Finances.* Prepared for the Davenport Association of Professional Firefighters, for presentation to an Iowa Public Employment Relations Board factfinder. Davenport: June, 1988.

*An Analysis of Davenport City Finances.* Prepared for the Union of Professional Police, for presentation to an Iowa Public Employment Relations Board factfinder. Davenport: June, 1988.

*Economic Vitality for Iowa: A Choice of Programs and Philosophies.* Prepared for the Alamakee County Almanac: May 1988. (With David Osterberg).

*The Monopolization of the Meatpacking Industry: Tactics and Results, 1978-1983.* (With David Osterberg). Fall 1987-Spring 1988.

*The Iowa Department of Transportation RISE Grant to the City of Manchester/Manchester Enterprises, Inc.: A Case of Official Misconduct. A Complaint to the Iowa Attorney General.* (66 pages) July 1987.

*Francis Lauer Youth Services, Cerro Gordo County, Iowa. An Analysis in Support of the Transition From Cerro Gordo County Agency to Non-Profit Corporation.* Presented to the Cerro Gordo County Board of Supervisors on Behalf of Francis Lauer Youth Services. (52 pages). July 1987.

*Predatory Competition, Jobs, and the Supply of Hogs: The Role of State Assistance in the Collapse of the Independent Hog Packing Industry in Iowa.*

Presented to the Iowa Transportation Commission. May 1987.

*Combining Fire and Ambulance Service to Improve Service and Lower Cost.* Prepared for the Davenport Association of Professional Firefighters (Local 17, International Association of Firefighters). March 1987.

*Of Market Rates and Indubitable Equivalents: Law and Economics in Determining the Appropriate Interest Rate in Farm Chapter 11 Cramdowns.* January 1987. 80pp. (With Roger Colton).

*Researching the American Corporation: Purposes and Methods.* January 1987. 50pp.

*Local Regulation of Utilities in Nebraska: A Guide for Local Officials.* Prepared for the Nebraska State Energy Office. Lincoln, Nebraska. December 1986. 150pp.

*A Comparison of Base Wages Plus Fringe Benefits at Various Plants (in the meatpacking industry).* Prepared for the United Food and Commercial Workers Local 222. November 1986.

*Public/Private Enterprise as an Economic Development Strategy for States and Cities* Prepared for the Economic Development Administration of the U.S. Department of Commerce. July 1986. (With Peter S. Fisher and Roger Colton).

*Evaluation of the Energy Management Technician Pilot Program,* Prepared for the Iowa State Energy Policy Council. June 1986.

*The Future of Pork Packing in Monmouth,* Prepared for the City of Monmouth, Illinois, and the Illinois Development Finance Authority. June 1986.

*An Analysis of Davenport City Finances (Revised)* Prepared for the Iowa State Policemen's Association, Local #2. April 28, 1986.

*An Analysis of Davenport City Finances (Revised),* Prepared for the International Association of Firefighters, Local 17. April 18, 1986.

*The Des Moines-ICA Sewage Treatment Facilities Plan: The Economic Ramifications of a 1991 Completion Date* Prepared for the City of Des Moines for presentation to the U.S. Environmental Protection Agency. April 1986.

*Municipal Regulation of Cable TV Holding Companies After the Cable Communications Policy Act of 1984: (Heritage Corporation and the Siege of Block 80)* Prepared for the Iowa City Ratepayers Association. April 1986.

*An Analysis of Davenport City Finances.* Prepared for the International Association of Firefighters, Local 17. February 1986.

*An Analysis of Davenport City Finances: Preliminary Report.* Prepared for the Iowa State Policemen's Association, Local #2. February 1986.

*An Analysis of the Finances of the City of Council Bluffs.* Prepared for the Fraternal Order of Police, Council Bluffs Lodge #1. January 1986.

*Telephones for People: Providing for the Old, the Young, the Rich, the Poor, the Middle, Business and Workers, Cityfolks and Farmfolks.* Minority Report of Six Members of Northwest Bell Citizens Council #2. October, 1985.

*Thinking About Inter-Class Telephone Subsidies: (The Tale of the Gardener's Pay).* Prepared for the Iowa Ratepayers Association. April 1985.

*The Great Gumdrops Monopoly: A Parable.* Prepared for Northwest Bell Citizen Council #2, April 1985.

*Universal Service: Materials for Discussion.* Prepared for Northwest Bell Citizen Council #2, April 1985.

*The Economic Impacts of a Prevailing Wage Law for Iowa State Construction Projects.* Prepared for the Iowa State Building and Construction Trades Council. February 27, 1985. (with Peter S. Fisher).

*A Primer on Bypass.* Prepared for Northwest Bell Citizen Council #1, January 1985.

*Materials on Telephone Rates: The Consumer Position.* Prepared as Part I of a manual on telephone regulation for consumer groups. January 1985.

*An Analysis of Davenport City Finances: A Preliminary Report.* Prepared for the Iowa State Policemen's Association Local 2. January 1985.

*Combining Fire and Ambulance Service.* Prepared for the City of Rock Island on behalf of the Rock Island Firefighters Local 26. October 1984.

*Designing Electric Rates to Conserve Community Resources, Enhance Local Productivity and Stem the Outward Flow of Energy Dollars: The OSL Rate Design Proposal for Nebraska.* Prepared for the Nebraska Energy Office. (With Skip Laitner). October 1984.

*An Analysis of City Finances: Burlington, Iowa.* Prepared for Local 301 International Association of Firefighters. March 1984.

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*An Analysis of City Finances: Burlington, Iowa.* Prepared for Local 828. The American Federation of State, County and Municipal Employees. March 1984. With Peter Fisher.

*Source Reduction in Hazardous Materials Regulation: A Strategy for Both Economic Development and the Environment.* Prepared for the Select Advisory Panel on Hazardous Waste Management of the Iowa Department of Water, Air, and Waste Management. February 1984.

*The Electric Ratepayers Protection Act: An Evaluation.* Prepared for and presented to the Consumer Protection Committee of the Missouri Legislature. January 1984.

*Investments in Energy Engineering and Technology at the Local Level: Planning an Assist from State Agencies.* Prepared for the Nebraska Energy Office, February 1984.

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*Meatpacking Industry on Iowa's Livestock Producers and Communities.* Prepared for Reports on the Iowa Economy. June 1983.

*Policy Options for Dealing with the Impact of Continuing Energy Price Increases on the Iowa Economy for the Iowa State Legislature.* February 1983 (LEAG).

*An Analysis of Proposals for the Reform of the Iowa Tax System* (with Peter S. Fisher). December 1982.

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*The Iowa City Electric Franchise: A Report to the City Manager.* January 1982.

*A Comparison of Major Cities in Iowa and Surrounding States by Income, Wage Levels, and Housing and Food Costs.* March 1983.

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**Book Reviews:**

Review of Walter Adams and James W. Brock, *Antitrust Economics on Trial: A Dialogue on the New Laissez Faire*, In *The Journal of Economic Issues* (December 1992).

Review of James A. Gross, *Teachers on Trial: Values, Standards & Equity in Judging Conduct and Competence.* In *The Journal of Labor Studies.* Summer 1990.

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and Policy, in *The Water Resources Bulletin*. October 1981.

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Review of Wm. C. Peters, *Exploration and Mining Geology*, in *The Journal of Energy and Development*. Autumn 1980.

Review of Burnham, P. Beckwith, *The Theory of Free or Communist Distribution*, in *The Social Science Journal*. January 1981.

Review of Russ Talbot, *The European Community's Regional Fund*, in *The Annals of Regional Science*. July 1980.

Review of Louis P. Cain, *Sanitation Strategy for a Lakefront Metropolis: The Case of Chicago* in *The Water Resources Bulletin*. April 1980.

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Review of Shabad and Mote, *Gateway to Siberian Resources: The Baikal-AMVR Mainline*, in *Growth and Change*. July 1979.

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Review of *Mathematics of Environmental Processes*, in *Journal of Energy and Development*, Vol. 3, No. 2. Spring 1978.

Review of A. Zaubermann's, *The Mathematical Revolution of Soviet Economics*, in *History of Political Economy*, Vol. 8, No. 2. Summer 1976 (H. Sherman second author).

**Post Graduate  
Courses:**

Oregon Land Use Law, OSB. Portland, Oregon  
December 1996.

Advanced Insurance Issues Facing Oregon  
Businesses. OSB Portland, Oregon September 1996.

National Park and Public Land Ecosystems: Meeting  
the Challenge of Common Boundaries and Conflicting  
Mandates. Sponsored by the Center for Environmental  
and Resource Law. Snowbird, Utah. April 1995.  
(Paper presented: "Whose Goals and Whose  
Alternatives? How Bad Can a Private Goal Be and Still  
Define the EIS Under NEPA?")

Federal Civil Litigation in Oregon, OSB. October 1994.

Economic Considerations in Managing Hazardous  
Waste, The Tenth Annual Hazardous Waste Law and  
Management Conference. Sponsored by the  
Northwestern School of Law. October 1993.

Spanish Language Refresher: 120 hours. El Centro  
Cultural. Hillsboro, Oregon. 1988-9. (Certificate).

Natural Gas Regulation Training Conference, National  
Consumer Law Center, Pittsburgh, Pennsylvania,  
November 1982.

Faculty Workshop Program on Breeder Reactor  
Technology, Argonne National Laboratory, Argonne-  
West, Idaho Falls, Idaho, August 2-5, 1982.

Workshop on Appraisal of Utilities and Railroad  
Property for Ad Valorem Taxation. National Tax  
Association – Tax Institute of America. Wichita State  
University, July 27-30, 1981. (Certificate)

Simulation Modeling and Analysis. Institute for  
Professional Education. Los Angeles, September  
1978. (Certificate)

**Employment  
History:**

Current: Managing Partner: Osterberg & Sheehan,  
Public Utility Economists, Scappoose,  
Oregon & Mount Vernon, Iowa.

Partner: Fisher, Sheehan and Colton,  
Public Finance and General Economics,  
Scappoose, Oregon, Iowa City, Iowa, and  
Belmont, MA.

Private practice of law (land use, utility  
regulation, low-income issues, and the  
environment)

- 1989-92 Counsel, Telecommunications Law Project,  
Citizens' Utility Board of Oregon, Portland,  
Oregon.
- 1979-84 Assistant Professor, Graduate Program in  
Urban and Regional Planning; and  
Research Associate at the Institute of  
Urban and Regional Research, The  
University of Iowa, Iowa City, Iowa 52242.
- 1979 Lecturer, Graduate School of  
Administration, UCR, (Analysis of  
Projects). (Winter)
- 1976-9 Lecturer, Department of Economics,  
California State College at San Bernardino.
- 1978 Consultant, Richard Terry &  
*Associates, Impact of Federal Sewer  
Sizing Limitations on Economic Growth in  
the West San Bernardino Valley.*
- 1977-8 Research Associate, UCR-USDA (Forest  
Fire Damage Functions).
- 1977 Water Resource Consultant, Janczyk  
& Sheehan, Riverside (water quality  
problems in the Santa Ana and San  
Jacinto watersheds).
- 1976-7 Holder of a Regent's Fellowship, UCR.
- Spr 1976 Research Assistant (Geothermal  
Development Project), Department of  
Economics, UCR.
- 1976 Teaching Assistant

- (Microeconomics), Department of Economics, UCR). (Fall, Winter)
- Spr 1975 Research Assistant to Professor K. C. Kogiku in applied mathematical economics.
- 1975 Holder of a Regent's Fellowship. (Fall, Winter)
- 1975 Associate-in-Economics, Department of Economics, UCR (to teach one course in labor economics). (Winter)
- 1974-76 Instructor, Chapman College (Microeconomics, Macroeconomics, Statistics, Development, Comparative Systems, Cycles and Growth, Urban Economics, Decision Theory, Quantitative Methods, and Operations Research).
- 1974 Consultant, A. A. Webb Associates, Inc., Consulting Engineers, Riverside (urban information systems).
- 1973-4 Teaching Assistant (Economic Statistics), Department of Economics, UCR.
- 1970-2 Dean's Statistical Clerk, Dean James Earley, College of Social and Behavioral Science, UCR.
- 1969-70 Assistant to the Hospital Administrator, Patton State Hospital.
- 1967-69 Electrician, Timna Copper Mines.
- 1963-66 U.S. Marine Corps.

**Honors and Awards:**

Winner, Cascade Policy Institute Better Government Competition 1996, for the study, *Home-Based Enterprise in Oregon: Improving Local Regulation of an Important Economic Asset* September 1996.

Fullbright Fellowship to Pakistan for 1979-81 awarded August 1979 (declined).

**Affiliations:**

Association for Evolutionary Economics

Association for Institutional Thought  
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## CERTIFICATE OF SERVICE

Pursuant to 10 CFR § 2.305 the undersigned attorney of record certifies that on September 23, 2004, the foregoing Responses on Behalf of Petitioners Nuclear Information and Resource Service and Public Citizen to Requests for Admissions by Commission Staff was served by electronic mail and by first class mail upon the following:

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