

Approved: 2-7-94
Date

MINUTES OF THE SENATE COMMITTEE ON ENERGY AND NATURAL RESOURCES.

The meeting was called to order by Chairperson Don Sallee at 8:00 a.m. on February 3, 1994 in Room 423-S of the Capitol.

All members were present or excused:

Committee staff present: Raney Gilliland, Legislative Research Department
Dennis Hodgins, Legislative Research Department
Don Hayward, Revisor of Statutes
Clarene Wilms, Committee Secretary

Conferees appearing before the committee:

Blaine Bertrand, Lawrence Irrigation Association
Mark Hershey, Homeowner, Lawrence, KS
Brett M. Blackburn, Blackburn Nursery and Lawn Service, Inc. Topeka, KS
Dennis Rosen, Homeowner, Lawrence, KS
Dennis Schwartz, Director, KS Rural Water Association
Wilson E. Speer, General Counsel, Water District No. 1, Johnson County
Written Testimony Only, Dwayne W. Peaslee, President, Kansas State Building and Construction Trades Council .

Others attending: See attached list

SB-611 - water pollution; concerning lawn irrigation systems

Blaine Bertrand, Kansas Irrigation Association, appeared before the committee in support of SB-611 telling committee members of problems which have arisen concerning statutes and regulations relating to backflow and cross-connection requirements and which device would best protect citizens. Mr. Bertrand stated that on November 24, 1992, he and a group of Lawrence homeowners and city commissioners met to discuss having sprinkler systems classified as low hazard and allowing a double check valve, which is a below ground device which is not subject to freezing or vandalism as is an above ground device. Mr. Bertrand stated two reasons he and others in the lawn sprinkler system business believe the underground, double check device is superior. The double check device is not above ground where it could be subject to freezing and vandalism which could cause failure and provide no protection at all. There are very few documented cases of problems and those that are documented had no device at all or a device that was improperly installed. He further stated that KDHE policy recommendations do not reflect any documentation of failure of above ground devices. However, any person in the industry can cite cases of failure or breakage in aboveground devices nor mention costs involved. Mr. Bertrand stated KDHE is classifying the sprinkler device as high hazard while the high hazard hose spigot on the outside of the house requires only a low hazard device. Mr. Bertrand stated that cost to retrofit with the proposed device would cost homeowners between \$350 to \$400. A university or large business or institution it could run into thousands of dollars.

Mark Hershey, homeowner, Lawrence, appeared in support of SB-611 speaking as a representative of homeowners in Lawrence. Mr. Hershey stated that the issue was whether lawn sprinkler systems are hazardous and whether they need type a or b protection. Mr. Hershey stated the one occurrence of failure cited to him was in San Luis Obispo, CA where the system failed and actually sucked insecticides and water contaminants into a water supply. Mr. Hershey stated he spoke with personnel who told him this was not a backflow system, it was an open pipe.

Mr. Hershey stated the double check valve has two spring parts, both of which must fail before any contamination could possibly occur. Due to conflicting opinions Mr. Hershey finally called San Luis Obispo officials and ascertained that failure in 1986 involved a faulty operating valve and there was no backflow device on the system at that time.

Mr. Hershey continued his testimony stating that both devices involve similar costs but the difference is location. In Lawrence the plumbers went to the city and obtained regulations involving only copper retrofitting which can only be installed by a plumber. He further called attention to the fact that water meters

CONTINUATION SHEET

MINUTES OF THE SENATE COMMITTEE ON ENERGY AND NATURAL RESOURCES, Room 423-S Statehouse, at 8:00 a.m. on February 3, 1994.

are below ground because of freezing problems. Above ground devices are prone to freezing and rupture. Other areas in the south find vandalism a major problem due to the devices being broken off to sell for the brass content leaving open pipes. Mr. Hershey stated that in Las Vegas over 10,000 above ground devices burst. Removal of the aboveground device has been recommended prior to freezing to prevent damage, but it is not always known when freezing will occur. Mr. Hershey stated that the cost of reworking systems in Douglas and Johnson counties would cost millions of dollars in initial costs.

Mr. Hershey told committee members that 1) above ground devices for water sprinkler systems are not an example of overkill, it is an example of creating a problem where no such problem exists. 2) You are talking about millions of dollars initially as well as on-going expenses. In closing Mr. Hershey told the committee he appeared because these devices would place danger where none presently exists and it is a needless, outrageous, unnecessary waste of homeowners' dollars.

Brett D. Blackburn, Blackburn Nursery and Lawn Service, Inc. appeared before the committee in support of SB-611 stating he brought a slightly different aspect to the hearing in that he is Vice-President of a company which installs irrigation systems, retail backflow preventers and he was also Vice-President of a company which wholesales backflow prevention devices and irrigation systems in Kansas and Nebraska. Attachment 1 Mr. Blackburn told members he was a certified backflow device tester and a mechanical engineer and felt he had a good working knowledge of this situation.

Mr. Blackburn pointed out that testing labs, while regarded as independent, are paid millions of dollars by backflow companies to test, certify and approve new devices. This could be a cycle which could be never ending, always moving to a higher level of protection.

Mr. Blackburn told the committee that if safety is the issue, all facets of the problem should be investigated and regulated equally.

Dennis Rosen, a Lawrence homeowner, appeared on behalf of many other homeowners in support of this bill, stating the real issue is one of safety, one which will maintain the safety of the water supply. Mr. Rosen stated that with the double check valve, both would have to fail in combination of a series of events, with probability of occurrence being practically nil before there is any contention for danger to residents. He further stated no failures had been documented while the above ground devices had failed due to freezing and other problems many times.

Wilson E. Speer, General Counsel, Water District No. 1 of Johnson County, appeared and presented testimony opposing SB-611. Attachment 2 Mr. Speer stated this bill dealt only with a very narrow segment of the whole issue. Mr. Speer stated that K.S.A. 65-163a and K.S.A. 65-71g bear upon backflow and cross-connection prevention, and neither of them clearly mandates requirements for protection. Therefore the agencies have no statutory guidance on whether the contamination is to be merely contained to protect the water supply system, or whether the contamination is to be isolated at the source of contamination in order to protect more than the water supply system itself.

Mr. Speer concluded by stating SB-611 addressed a small portion of a large problem and there was a need for a comprehensive legislative determination of the scope of backflow protection to be afforded as a matter of legislative policy. He further stated a provision for some standard was needed to determine the relative risk from the range of contaminations that can result from backflow and cross-connections.

Mr. Dennis Schwartz, Director, Kansas Rural Water Association, appeared in opposition to SB-611 stating that the waterworks industry and regulating agencies maintain that lawn sprinkler systems represent high hazard locations and therefore need to have appropriate devices installed to ensure that the public health is protected from possible backsiphonage or backflow from the sprinkler systems. Attachment 3 He further stated that legal counsel who specialize in the area of cross connection control programs for public water systems advise that the failure of a governing body to require adequate protection according to industry standards could be construed as negligence.

Written testimony in opposition to SB-611 from Dwayne W. Peaslee, President, Kansas State Building and Construction Trades Council, was handed to committee members. Attachment 4

Chairperson Sallee announced that the hearings on SB-611 would be continued at 8:00 a.m. on Monday, February 7, 1994 in room 423-S.

The meeting adjourned at 8:57 a.m.

GUEST LIST

SENATE COMMITTEE ON ENERGY & NATURAL RESOURCES

DATE February 3, 1994(PLEASE PRINT)
NAME AND ADDRESS

Karl Mueldener Topeka
Jerry Grant Topeka
 Ed Speer Olathe
 DAN GROVER Olathe
 Dennis Schwartz Tecumseh
 Ron Hammerschmidt Topeka
 MARTI CROW LEAVENWORTH
 Leland E. Rolf Topeka
 Larry D Shannon Topeka
 Duane H. H. Lawrence
 Ron Baker Lawrence
 Dennis Rosen Lawrence
 MARK HIRSCHY LAWRENCE
 Terry Randles Topeka
 Harry Herington Topeka
 JANET STUBBS Topeka
 Al LeDoux Holton
 Sheila Graham } KS Senate
 Jane Olsen }
 Sandy Praeger }
 ED SCHAUER

ORGANIZATION

KDHE, Forbes
KDHE
 W. D. No. 1 of Johnson County
 2150 W 173 ST Olathe, KS
 Ks Rural Water Assoc
 KDHE
 KDHE
 KSRA - DWR
 Topeka - KSAWWA
 TURF MASTERS
 Wilburly & LANDSCAPE INC.
 Homeowner
 Homeowner
 City of Topeka
 League of KS Municipalities
 STUBBS & Assoc / MCAK
 Yes
 WESTERN RESOURCES INC.

Comments on Senate Bill 611

Presentation By: Brett M. Blackburn

Vice President - Blackburn Nursery & Lawn Service, Inc. (Irrigation Retailer and Installer)

Vice President - Topeka Sprinkler Supply Company (Irrigation Equipment and Backflow Preventer Wholesaler)

Lawn Sprinkler Homeowner

Certified Backflow Prevention Device Tester

Degree: Bachelor of Science in Mechanical Engineering - University of Kansas

We feel that we (lawn sprinkler homeowners and contractors) are continually being held to a higher standard than all others, especially Public Water Utilities and Plumbing Contractors. Water utilities allow themselves to have open drains on dry barrel fire hydrants, and leaking water meters, that have continually been sources of contaminated or polluted water. Plumbing contractors are not required to install testable, high-hazard devices on the most common cause of cross contamination incidences: the Hose Bib or common water faucet.

While no one wants to put the water supply at risk, the regulatory agencies and inspection departments are continually chasing "ghosts-in-the dark" that probably do not exist. We are told that lawn sprinkler systems are a high-hazard risk, yet no legitimate documentation exists to rationally support the claim.

Our main focus is the relative risk relating to lawn sprinkler systems and the proper method of backflow protection. We are concerned with public safety, and our main concern is HOW to best protect the water supply considering all realistic factors and conditions.. Need for a particular protection device should be based on facts, past performance of the device and environmental conditions, rather than theoretical conditions, hypothesized and created in testing labs.

While testing labs are generally regarded as independent, they are also paid millions of dollars by backflow companies to test, certify, and approve new devices. If a company invents a new device, with a new level of protection, all companies will have to build that same type of device and have it tested. The cycle could be never ending, asking sprinkler homeowners to change to a higher level of protection.

Senate Energy & Nat'l Resources
February 3, 1994
Attachment 1

A realistic approach should be taken to the selections and level of protection methods required. Virtually no risk can be totally eliminated. Protection can only be based on based on realistic percentages. If we apply the same standards the backflow gurus attach to sprinkler systems, to all other areas of the law; citizens would be required to wear bullet proof vests, never be allowed outside during a storm watch, and never allowed to drive in cars.

We feel that lawn sprinklers are a very low degree of hazard and are adequately protected by a double-check assembly, safely installed out of harms way in a pit. We know of no instances of contamination (In Kansas and in the U.S.) of any kind due to a sprinkler system protected by a Double Check. We are not aware of failures of double check valves, in any application, causing a contamination incident. Taking it one step further, we know of no instances of cross contamination due to Totally unprotected sprinkler systems in Kansas history. Probability professors have told me that if an incident has not occurred in the past hundred years, it is no likely to happen in the next 100 years, and so on. Odds would indicate that a double check is a very safe method of backflow control for a lawn sprinkler system.

The level of chemical contaminants applied to lawns is diminishing every day. The EPA is continually diluting the strength of chemicals and moving many off the market. Once the chemical is applied to a lawn, it is diluted and starts breaking down. If backflow would occur, the chemical is diluted again in the lateral lines. It is then diluted in the mainline. It is diluted again once it reaches the water main. How much chemical or contaminant must be present to do harm when it reaches this level of dilution?

Also backflow would have to occur for this contamination begin. In most areas, when a water main breaks, pumps automatically turn on to bring the pressure up to standards. So for a contamination to occur (if toxic substances were present in sufficient amounts), the sprinkler zone would have to be running at the same time the pumps did not keep the water main pressure from becoming negative. The main break or pressure vacuum would have to be occurring in the same general location ast the operating sprinkler system. The probabilities of this are very, very, small. (In the millions, probably the 100's of millions)

On the opposite side of the issue however; the industry knows of many cases of backflow contamination occurring as a result of Fire hydrants, leaking water meters, broken water mains, and the most dangerous of all and number one culprit, the hose bib. The hose bib is protected only by non testable, single-check atmospheric vacuum breaker, which is only viable protection if installed

six inches above its highest point of use. This is, of course, not how the hose bib is most often used when connected to a garden hose..

We are told by the regulators and water suppliers that the risk involved (including their track record of contamination) of the previously mentioned items (fire hydrants, hose bibs, etc.) is not great enough to warrant any or higher degree of protection versus the cost of implementing a high degree of protection.

Why are the backflow industry and water suppliers so intent on chasing ghosts that probably don't exist (the mythical high hazard lawn sprinkler and supposed inadequate double check valve) and yet they ignore the items that stare them in the face, day after day. Allowing unprotected items such as fire hydrants, water meters, sink pistol nozzles, and improperly protected (in Backflow Guru Terms) Hose bibs: which have been known hazards, can certainly be viewed as a double standard. The reason for this double-standard must surely be that the financial numbers involved in addressing the above problems make it a problem not worth tackling. However, it is easy to show a "WE CARE" attitude by using selective enforcement on, what they feel, is a small group of poorly organized individuals. Holding the small group to an unrealistic higher standard, would show effort, even if it means eliminating that group. The regulation and supply side of the backflow industry both benefit immensely from greater regulation. They receive job security as well as financial gain. Regulator, sales people, and inspectors all have been known to receive extra pay for teaching cross-connection control classes and or testing fees.

The regulators, inspectors, and salespeople are generally pushing for the above ground Reduced Pressure Zone Device (RPZ) to become the required device for lawn sprinklers. This is regarded to be the most expensive and hardest to service device. We prefer the time-proven, safe, Double Check Valve Assembly (DCA) .
Some comparison of the two devices:

If temperatures fall below freezing, an above ground RPZ can freeze and break, leaving the water supply exposed to outside contaminants. A Double Check in a pit or valve box would be safe and protected for freezing conditions and the water supply would not be at risk. (A side note: The above ground devices in a Nevada city, froze and broke depleting the city's water supply)

In a flooding situation, an RPZ has an open vent, which if submerged, leaves only a single check valve protection for the water supply. A submerged Double Check remains safely intact, affording the same high level of protection to the water supply.

The RPZ is above ground, making an attractive target to vandals. A RPZ, if broken off, not only puts the water supply at risk, but wastes large amounts of water. A Double Check is safely hidden, below ground in a securely locked valve box or pit.

There has never been a recorded cross-contamination incident on a sprinkler system protected by a Double Check Assembly.

These four reasons alone are obvious reasons why the Double Check Assembly should be the device of choice for Underground lawn sprinkler systems. The advantages are many as compared to the problems associated with the Reduced Pressure Zone device. If water safety is the important issue, why require anything but the best device available, for all conditions. If high hazard containment is a primary issue, correct the problems that exist, and do not react to the theoretical threats that may be born in a testing lab.

Senate Bill 611 will help better protect the drinking water supply for all of us.

TESTIMONY PRESENTED ON BEHALF
OF WATER DISTRICT NO. 1 OF JOHNSON
COUNTY BY WILSON E. SPEER,
GENERAL COUNSEL AND RON GOOLD,
DIRECTOR OF OPERATIONS

SENATE BILL 611

Presented at the Committee Hearing On February 3, 1994

THE PRINCIPLE:

Senate Bill 611 addresses a very small segment of a larger unresolved problem relating to the integrity of the treated water supply for the State. Statutes and agency regulations relating to backflow and cross-connection prevention programs are intended to protect either every user of any source of potable water or the water supply system, which are different standards of protection. Regardless of the scope of protection, any local enforcement of a backflow and cross-connection program must have a statutory foundation. No state agency or local water utility has original authority to determine matters of legislative policy, and the legislature may not delegate to administrative agencies the determination of what the law shall be. Therefore, it is exclusively the function of the legislature to provide statutory standards for protection against the risks of backflow and cross-connections. Presently, only K.S.A. 65-163a and K.S.A. 65-171g bear upon backflow and cross-connection prevention, and neither of them clearly mandates requirements for protection.

THE PROBLEM:

While the existing statutes address the topic of remedies for contamination through backflow and cross-connections, they really do not answer the policy question of "Who is to be protected from what?" "Who" could

be either the individuals drawing water from any source of potable water supply served by the same connection as the equipment causing the contamination, or it could be those individuals served by every other connection in the water supply system. The "what" is answered with the undefined term "contamination." The determination of who is to be protected and what constitutes contamination is delegated by the statutes to the Kansas Department of Health and Environment and the local water utilities which provide the public water supply. This amounts to a delegation of legislative authority to the agencies to determine how and when to control the risks of contamination through cross-connection and backflow prevention. The issue of whether only the water supply system itself should be protected, which results in control devices being placed at the point of connection where private property is served thereby containing the contamination to the entire premises being served through that connection, or whether the control device is connected to the equipment in order to isolate the contamination at its source thereby protecting all individuals on the same premises being served by the same connection to the water supply system, is left to be resolved by the agencies rather than by statute. The agencies therefore have no statutory guidance on whether the contamination is to be merely contained to protect the water supply system, or whether the contamination is to be isolated at the source of contamination in order to protect more than the water supply system itself. This question has become a recent hot issue, and it is not within the authority of the agencies to resolve it.

KDHE INTERPRETATION:

Until March 30, 1993, the Kansas Department of Health and Environment (KDHE) operated under Policy Memorandum #91-2 which requires water suppliers to have a backflow and cross-connection program that protected

against risk from each source of contamination in order to protect every source of potable water. This was a policy of "isolation." The local water utilities were required to adopt an isolation program and to submit it to the Department for approval. On March 30, 1993, Charles Jones, Director of the Division of Environment of KDHE, issued a letter to several senators announcing that the Department would no longer approve or disapprove the backflow programs of the local water utilities, and that the Department would instead rely in the future upon unenforceable guidelines. This effectively left the decision to the local water utilities to isolate or contain the contamination. Residential owners with lawn irrigation systems objected to isolation.

NEW REGULATION PROPOSED BY KDHE:

Proposed Regulation 28-15-50 leaves the decision on how backflow devices should be located to the discretion of the local water utility. The issue of isolation versus containment is therefore left to be resolved by the local water utility. The proposed regulation makes references to contamination in both the potable water sources, which would be a reference to "isolation," and to the public water supply system, which is a reference to "containment." Even if the Department had the authority to legislate which policy should be adopted, the proposed regulation is ambiguous and the issue is unresolved.

THE ISSUE:

There are two policy issues on the subject of backflow and cross-connection prevention. The principal issue is whether the protection should extend only to the water supply system itself through "containment," or whether it should be extended to protect everyone drawing from any potable water supply source through a program of "isolation" which places the protective devices at

every item of equipment or other source of contamination. The other issue is what standard should be applied in determining the degree of risk for contamination that will call for application of certain types of backflow prevention devices as distinguished from other types. These policy decisions are the responsibility of the legislature and should be resolved by a comprehensive statute. While the legislature may delegate discretion in the execution or the administration of the law to the KDHE or the local water utility, that delegation must be pursuant to a declared policy and a fixed standard for exercise of the delegated discretionary power to the agencies. Again, the legislature must answer the question, "Who is to be protected from what?"

LAWN IRRIGATION SYSTEMS AS A HAZARD:

Water District No. 1 believes that the appropriate designation of the risk of contamination from lawn irrigation systems should be denominated as "high hazard." As recognized in existing KDHE regulations, this designation is appropriate because of the toxic chemicals that are characteristically applied to residential lawns in the form of fertilizer and insecticides. If a "low hazard" designation were to be allowed, thereby allowing the use of a double check valve as the backflow prevention device, then the lawn irrigation system could be back-pressured without appropriate protection. Therefore, the RPZ or air-gap device is the only device that would give total protection. The respective costs of an RPZ air-gap device and the double check valve are approximately the same for both hardware and installation.

INADEQUACIES OF SB 611

The proposed bill takes one segment of the entire topic and classifies the hazard from lawn irrigation systems. The bill does not undertake to locate the

protective device to resolve the isolation or containment issue. The language of the bill vaguely implies that isolation is intended since it directly relates the prevention device to the lawn irrigation system as the source of contamination. Even if isolation is intended, the bill makes no effort to generally resolve the isolation-containment issue. The bill refers to those lawn irrigation systems which are not used for the application of chemicals. There would be no practical way to determine from time to time whether the system is being utilized for chemical applications.

CONCLUSION:

Senate Bill 611 undertakes to address a small portion of a large problem. What is needed is a comprehensive legislative determination of the scope of backflow protection to be afforded as a matter of legislative policy, and to provide some standard for determining the relative risk from the range of contaminations that can result from backflow and cross-connections. Until these issues are resolved by statute, no amount of regulation by the Department of Health and Environment or the local water utilities will survive litigation by irate property owners challenging an unlawful delegation of legislative authority.



P.O. Box 226 • Seneca, KS 66538 • 913/336-3760 • FAX 913/336-2751

February 3, 1994

TO: Senate Committee on Energy and Natural Resources

Mr. Chairman and Members of the Committee, I come before you today as a member of the Board of Directors of the Kansas Rural Water Association. The Kansas Rural Water Association has active membership of 270 rural and public wholesale water districts and 225 cities across the state. The Kansas Rural Water Association provides on-site technical assistance to public water supply systems, including the cities and rural districts, trailer courts, school districts that have their own water systems and many other privately owned public water systems. I am also a member of the Board of Directors of the National Rural Water Association which represents over 15,000 water supply systems.

The Kansas Rural Water Association has successfully provided training for public water supply systems, i.e., cities, rural water districts, schools, trailer parks, etc., since 1976. Since 1986, our Association has been very actively involved in providing training for cross connection control and backflow prevention. The Kansas Rural Water Association provides many 5-day training courses to qualify those who successfully complete the course as "trained testers" of backflow prevention equipment.

Proper cross connection control is a great area of concern for public water systems. If you ask the right people, you will be given innumerable horror stories where incidents of backflow or backsiphonage of contaminated water have caused personal injury and even death. The problem of backflow or backsiphonage occurs when water pressure in the public water supply system drops. In extreme cases, a vacuum can be created on the residential water system. Such occurrences represent potential hazards to public health unless the city or rural water district is safeguarded from high hazard locations. Kansas Regulations (K.A.R. 65-163A) require that all public water systems have an approved cross connection control program. These programs include the physical inspection of high risk locations.

Without question, the waterworks industry and regulating agencies maintain that lawn sprinkler systems represent high hazard locations and therefore need to have appropriate devices installed to ensure that the public health is protected from possible backsiphonage or backflow from the sprinkler systems.

The costs to install appropriate devices cannot outweigh public health protection. We also submit that lawn sprinkler systems are luxury items which makes even more unreasonable any complaint about the cost of installing approved protection equipment. Concerns for freeze protection are easily remedied; the units are drained or winterized.

We have been advised by legal counsel who specialize in the area of cross connection control programs for public water systems, that the failure of a governing body to require adequate protection according to industry standards could be construed as negligence per se. We strongly encourage further legal opinion be obtained in this regard. We do not believe that the Kansas Legislature can legislate away a particular hazard when nationwide, that hazard is recognized and documented.

The term "non-community" in the bill is not consistent with definitions associated with public water systems in existing Kansas Regulations.

The Kansas Rural Water Association urges you to oppose S.B. 611.

Respectfully,

Dennis Schwartz
Director: Kansas Rural Water Association

Senate Energy + Natural Resources
February 3, 1994
Attachment 3

KANSAS

State Building and Construction Trades Council



Dwayne W. Peaslee
President

Jim Hastings
V. President

Bruce A. Revas
Secretary

P.O. Box 4041, 930 E. 28th Street
Lawrence, Kansas 66046
(913) 843-3151 Fax (913) 843-3421

February 2, 1994

Senator Don Sallee
Room 128 S, State Capitol
Topeka, KS 66612

Dear Senator Sallee:

The Building Trades is against S.B. No. 611. We feel that it is not responsible to jeopardize the public water system by knowingly allowing a potential health hazard. It has been proven many times that the low hazard device is not as reliable as the high hazard device.

The majority of the surrounding states have already supported the high hazard classification on lawn sprinklers because of safety to the public. The lawn sprinkler companies and owners, who possess lawn sprinkler systems, are advocating this bill because of self interest and not because they are genuinely concerned for the public water system. They are ignoring the dangers.

The Law says the preveyor is responsible and liable and this bill is removing a way of being responsible for public Health and the State would assume the liability.

Again, we ask that you support your experts on this matter, the Kansas Department of Health and Environment, and not take any action on S.B. 611. Thank you for your consideration in this matter.

Sincerely,

A handwritten signature in dark ink, appearing to read "Dwayne W. Peaslee", is written over a horizontal line.

Dwayne W. Peaslee
President

DWP/kk

TOTAL P.02

Senate Energy & Natural Resources
February 3, 1994
Attachment 4