

# Survey

## Treatment of Excess Flow Valves by State Public Utility Commissions

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*Ken Costello*  
Senior Institute Economist

### EXECUTIVE SUMMARY

Excess flow valves (EFVs) have become a highly contentious issue in the current national dialogue on the safety of local gas distribution systems. In fact, the debate over whether gas operators should be required to install EFVs dates back to the early 1970s. An EFV is a device that restricts the flow of gas in a customer's service line when a severe rupture in the line occurs. By restricting gas flow, an EFV may help to prevent deaths, injuries and property damage.

Current Federal regulations require gas operators to either notify new or renewal customers about the benefits and availability of EFVs (which customers can purchase), or voluntarily install EFVs on all new and renewal service lines. Federal regulations also require that EFVs meet minimum performance requirements.

The survey conducted for this report was done at the request of NARUC for the purpose of assisting the Pipeline and Hazardous Materials Safety Administration/Office of Pipeline Safety (PHMSA/OPS) in its review of current regulations. Forty-nine states and the District of Columbia responded to the survey. More than anything, the responses reflect the diversity of views held by both state commissions and gas operators regarding the installation of EFVs. The results of the survey were presented at a public meeting, sponsored by PHMSA/OPS, on June 17, 2005.

Highlights from the survey responses include:

- The majority of states believe that current federal regulations are effective and that no change is needed
- With regard to the installation of EFVs, most states view their primary function as enforcers of all current federal regulations
- The majority of gas operators do not voluntarily install EFVs
- Relatively few customers are willing to purchase an EFV when offered
- State commissions are split over who should make the decision to install EFVs

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## BACKGROUND

*The U.S. Office of Pipeline Safety is reviewing regulations on excess flow valves, a safety device for gas lines.*

The U.S. Department of Transportation (DOT), Pipeline and Hazardous Materials Safety Administration (PHMSA), Office of Pipeline Safety (OPS), is undertaking a review of current regulations pertaining to excess flow valves (EFVs). An EFV is a device that restricts the flow of gas in a customer's service line when a severe break in the line occurs. Most breaks are caused by excavation and vehicular accidents. By restricting gas flow, an EFV may help to prevent deaths, injuries and property damage. Pursuant to DOT Regulation 49 CFR Part 192.383, gas operators are required to either notify new or renewal customers about the benefits and availability of EFVs (which customers can purchase), or voluntarily install EFVs on all new and renewal service lines. Federal regulations also require that EFVs meet minimum performance requirements.

In its review of these regulations to determine whether changes are warranted, OPS requested information from state public utility commissions (PUCs). In the spring of 2005, the National Regulatory Research Institute (NRRI) conducted a survey with the intent of compiling a wide array of information on EFVs. The survey questions were sent electronically on April 14, 2005, jointly to the chair and a pipeline-safety expert of each commission. These questions were designed to give OPS additional information for its review of current regulations.

*The NRRI surveyed state public utility commissions to help find out whether change is warranted.*

## CATEGORIES OF SURVEY QUESTIONS

Ten survey questions were forwarded to PUCs covering various aspects of EFVs (see page 9). These questions can be grouped into four general categories. The first pertains to commission policies

on EFV installations and cost recovery, in addition to commission opinions on current EFV regulations. The second category identifies the policies of gas operators regarding EFV installations. The third category focuses on the operating performance of EFVs and, specifically, the conditions under which EFVs are deemed to operate effectively. The last set of questions relates to statistics on the number of EFVs installed and a breakdown between EFVs purchased by customers and those voluntarily installed by gas operators.

## GENERALIZATION OF SURVEY RESPONSES

Survey responses were received from 49 PUCs and the District of Columbia. The Hawaii Public Utilities Commission was the only PUC not responding. Residential use of natural gas in Hawaii is minuscule relative to gas consumption in other states.<sup>1</sup> As discussed below, the responses were uneven in the detail and comprehensiveness of the information provided. Some commissions presumably have more stringent reporting requirements than others, or at least they have better access to information on EFVs.

A few highlights of the responses with possible policy implications are as follows:

- *The majority of states report current federal regulations are effective and that no change is needed.* But a number of states, while expressing satisfaction with current federal regulations, offered recommendations for change.<sup>2</sup>
- *Consistent with the above statement, most states believe EFV installations should be (1) voluntary for the gas operator to install or the customer to purchase, and (2) determined by*

*local conditions.* Relatively few states believe that the federal government should be the responsible party for determining whether EFVs need to be installed.<sup>3</sup>

- *Gas operators and commissions have seen few incidents where an EFV would have prevented death, injury or significant property damage.* Little information is available from the states as to the effectiveness of EFVs, especially with regard to the number of incidents that would have been prevented by EFVs.
- *With regard to the installation of EFVs, most states view their primary function as enforcers of all current federal regulations.*<sup>4</sup> While most PUCs can presumably enact stricter rules than the federal regulations, they have chosen not to. It is probably safe to say that most states view EFVs as a low priority item and believe that current regulations are working reasonably well. This seems to be consistent with the overall tone of the survey responses received from the PUCs.
- *The majority of gas operators do not voluntarily install EFVs.* (This was based on the number, or list, of gas operators voluntarily installing and not installing EFVs provided by thirty of the PUCs.) No data were available to calculate the number of service lines for each of these two categories of gas operators. The overall responses indicate, however, that a higher percentage of large gas operators than small ones have a policy of voluntarily installing EFVs.
- *Gas operators even within a single state have different policies as to whether or not they voluntarily install EFVs.* Their reasoning may be based on (1) risk (for example, in rural areas where the gas operator has high line pressure and the response time in turning off

leaking gas could be relatively long) and (2) operational conditions (for example, line pressure and the degree of contaminants in the gas stream that may contain water, dust and welding particles). Another factor may be management philosophies on risk: some utilities may be more risk averse, for example, toward tort liability and bad publicity from an incident, and thereby willing to improve safety even if not cost effective. Some gas operators may also believe that customers should not have to make decisions regarding the safety of their gas service.<sup>5</sup>

- *State commissions overall have little information on the operating performance of EFVs as well as on other aspects of EFVs.* For example, less than 25 percent of PUCs have any statistics on the number of EFVs installed. A much smaller number compiles information on the operating performance of EFVs and on the types and brands of EFVs that have good performance records. Perhaps more than anything, this lack of reporting may reflect the relatively low ranking that most commissions place on EFVs, at least relative to other commission matters, except for assuring that gas operators are complying with federal regulations.
- *Interpreting the overall responses, relatively few customers are willing to purchase an EFV when offered.*<sup>6</sup> Customers may be at a disadvantage in deciding whether or not to have an EFV installed simply because they lack the education on how an EFV works and its benefits, and whom it protects. Educational programs and more information in general could help customers make better decisions.
- *A number of commission responses expressed support for requiring gas operators to install EFVs.*<sup>7</sup> Why those commissions have not enacted

*Most states report that current federal regulations are effective and no change is needed.*

*Relatively few customers are willing to purchase EFV when offered.*

*State commissions are split over who should make the decision to install EFVs.*

such a policy suggests the absence of an official commission position prescribing mandatory installations of EFVs.

- *PUCs are split over who should make the decision to install EFVs.*<sup>8</sup> About the same number of PUCs reported that only the customer should make the decision as those who reported only gas operators should. Other PUCs responded by saying that different entities (for example, both a customer and the gas operator) should share in the decision.

## SUMMARY OF PUC RESPONSES

A summary of responses for each of the ten survey questions are provided below, with the survey questions listed at the end of this report:

- *Installation policy* (question 1). The vast majority of PUCs (thirty-nine) require gas operators to comply only with federal regulations. Eleven states encourage gas operators to voluntarily install EFVs. How those states prompt gas operators to install EFVs was not reported.<sup>9</sup>
- *Voluntary installations* (question 2) In the vast majority of states, at least one gas operator voluntarily installs EFVs. In ten states, most of which lie in the West, no gas operator voluntarily installs EFVs. In five states and the District of Columbia, all gas operators voluntarily install EFVs. Three states have no data on which gas operators voluntarily install EFVs. For PUCs (twenty-nine states plus the District of Columbia) providing a breakdown of gas operators by EFV-installation policy, less than one quarter of the operators across those states were reported to voluntarily install EFVs.<sup>10</sup>

*In most states, at least one gas operator voluntarily installs EFVs.*

(See Table 1 for a state-by-state breakdown.) Of those states reporting the number of gas operators voluntarily installing EFVs, Minnesota and Ohio tied with the highest number (thirty-four). In reviewing the responses, large gas operators, and those which are privately-owned, seem more inclined to voluntarily install EFVs. Some exceptions, however, should be noted: in Colorado, only one gas operator voluntarily installs EFVs, a large municipal utility; in North Carolina, only two gas operators, both municipal utilities, were reported to voluntarily install EFVs; lastly, in South Dakota, only one gas operator, a municipal, voluntarily installs EFVs.

- *Number of EFV installations* (question 3) Thirty-eight PUCs do not keep any information on the number of EFVs installed. Twelve states reported the number of EFVs installed, with some providing incomplete information.<sup>11</sup> For the seven states reporting the total number of EFVs voluntarily installed by gas operators and the total number purchased by customers, over 98 percent were voluntarily installed by gas operators.<sup>12</sup> (See Table 2 for a state-by-state breakdown.) Somewhat striking, of the states reporting the number of EFVs purchased by customers, the total number was only 5,190, of which 4,681 EFVs (or 90 percent) were purchased by customers in a single state, Tennessee.<sup>13</sup> For PUCs reporting the number of EFVs installed, Ohio has the greatest number (close to 450,000), with Pennsylvania ranking second (over 200,000)<sup>14</sup> and Massachusetts third (over 176,000).<sup>15</sup>
- *Recovery of capital costs* (question 4) For privately owned gas operators voluntarily installing EFVs, in the vast majority of cases the capital costs are recovered in rate base. One anomaly is Ohio where individual customers



pay the installation costs even when an EFV is voluntarily installed by the gas operator.

- Exclusion of installations (question 5) Twelve states reported that gas operators do not install EFVs when line pressure is inadequate. In 17 states, EFVs are not installed when there is either inadequate line pressure or contaminants in the gas stream. As reported by some PUCs, other conditions may preclude EFV installations: service lines with more than one meter, a history of EFV operational problems, locations with branch services, service lines with pressure fluctuations, and excessive service-line length for a given pressure level.<sup>16</sup>
- Measure of effective operation (question 6) Almost all the states reported a line pressure of at least ten pounds per square inch gauge (psig) for EFVs to operate effectively (which is in parallel with federal regulations).<sup>17</sup> In Connecticut, gas operators are required to perform an engineering analysis and develop standards for conditions under which EFVs are effective and pose no significant risk of false closures.
- Data on operating performance (question 7) The vast majority of states do not assemble data on EFV historical operating performance; but eleven states provided information, either anecdotal or formally reported in nature. Table 3 contains the individual comments of these states.
- Reliability of EFV brands (question 8) States keep virtually no data on what types or brands of EFVs have been more reliable. Connecticut reported that spring-plunger type EFVs with nylon plungers have proven successful. One of the gas operators in Kansas reported to the commission that older EFVs with conical springs had the

potential to cause false closures. The gas operator has also indicated that the number of defective EFVs is comparable to the number of defects found in manufacturer-assembled service risers or other service-line components.

- Satisfaction with federal regulations (question 9) As seen in Figure 1, twenty-nine PUCs reported that current federal regulations on EFVs are working satisfactorily and they suggest no changes. Seven commissions expressed support for the mandatory installation of EFVs. These states are Maine, Michigan, Minnesota, New York, North Dakota, Pennsylvania and Rhode Island. Pennsylvania added that it could be mandated for either gas operators or customers, while New York argued that giving customers the choice has deterred EFV installations.<sup>18</sup> Ten commissions, while reporting general satisfaction with current federal regulations, offered comments for improvement.<sup>19</sup> Table 4 contains the comments of these states.
- Responsibility for installations (question No. 10) As seen in Figure 2, thirteen states responded that only customers should determine whether EFVs should be installed. Sixteen states support gas operators as the sole decision-maker,<sup>20</sup> while six states favor the federal government to assume this role (three of these states, Minnesota, New York and Rhode Island, also advocate a federal mandate on EFV installations). Three states favor state agencies to be the sole decision-maker on EFV installations, while six states support both customers and gas operators to be responsible. Finally, three states support gas operators, the state agency and the federal government to assume a shared role in making decisions on EFV installations.<sup>21</sup>

*Inadequate pressure and other conditions sometimes preclude EFV installation.*

*Almost all the states reported a line pressure of at least ten pounds per square inch for EFVs to operate effectively, which parallels federal regulations.*

**Table 1**  
**Ratio of Gas Operators Voluntarily Installing**  
**EFVs to Total Gas Operators, for Selected States**

<b>State</b>	<b>Gas Operators Voluntarily Installing EFVs / Total Gas Operators</b>
Alabama	5 / 118
Alaska	0 / 2
Arkansas	1 / 10
Connecticut	4 / 4
District of Columbia	1 / 1
Georgia	8 / 87
Idaho	0 / 3
Illinois	3 / 11
Indiana	8 / 35
Iowa	4 / 55
Maine	2 / 3
Maryland	7 / 8
Massachusetts	11 / 11
Minnesota	34 / 39
Missouri	1 / 50
Montana	0 / 3
Nevada	0 / 2
New Hampshire	2 / 3
New Jersey	4 / 4
New Mexico	0 / 17
New York	13 / 17
North Carolina	2 / 13
Ohio	34 / 42
Rhode Island	1 / 1
South Dakota	1 / 8
Tennessee	11 / 114
Vermont	1 / 1
Washington	1 / 4
West Virginia	2 / 23
Wisconsin	0 / 10
<b>Total</b>	<b>161 / 699 (23.0%)</b>

Source: Author's construct.

**Table 2**  
**Comparison of EFVs Voluntarily Installed by**  
**Gas Operator and Customer Purchases, for Selected States**

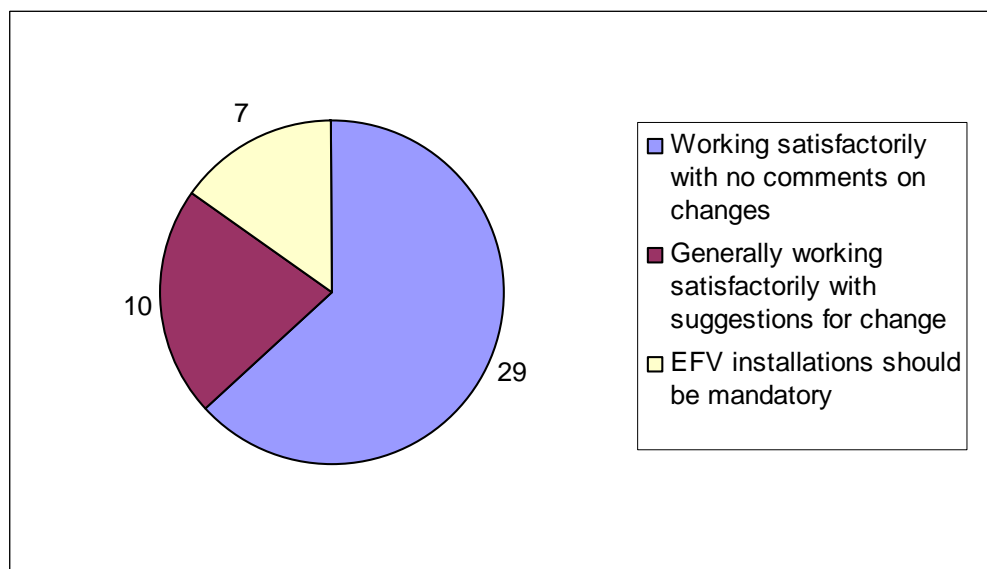
<b>State</b>	<b>EFVs Voluntarily Installed by Gas Operator (EFVs Purchased by Customer)</b>
Arkansas	182 (92)
Connecticut	35,000 (0)
Delaware	23,295 (0)
Maine	1,350 (8)
Minnesota	113,515 (409)
New Hampshire	30,000 (0)
Tennessee	67,729 (4,681)
<b>Total</b>	<b>271,071 (5,190)</b>

Source: Author's construct.

**Table 3**  
**Individual Responses on EFV Operating Performance**

State	Response
Arkansas and Iowa	No incidents on lines with EFVs, no activations of EFVs or false closures
Connecticut	No incidents on service lines with EFV; taking data over the past three years, the Department estimates that, on average, about 100 EFVs have activated per year to successfully terminate the flow of gas, with an estimate of 15 false closures per year (35,000 EFVs have been installed in the state)
Delaware	EFVs have successfully activated when underground service lines have been hit, and ten false closures have occurred (23,295 EFVs have been installed in the state)
Kansas	Some older EFVs had “spring” problems with the potential for false closures
Minnesota	No incidents on service lines with EFVs; 66 successful terminations of gas flow and 90 false closures reported
Michigan and Ohio	An unspecified number of false closures have been reported by gas operators
New Hampshire	Over a 20-year period, evidence points to successful terminations in all instances of 20 ruptures on service lines with EFVs, and less than four false closures
Rhode Island	EFVs have been successful in terminating gas flow, and also some false closures have been reported
Wisconsin	Less than fifteen EFVs have been activated to terminate gas flow

Source: Author’s construct.



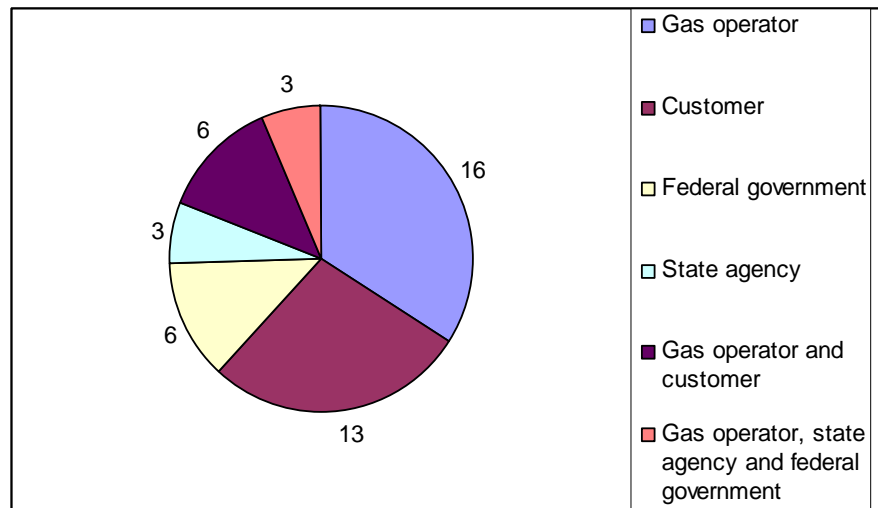
Source: Author’s construct.

**Fig. 1:** Opinions of PUCs on Current Federal Regulations.

**Table 4**  
**Individual Comments on Current Federal Regulations**

State	Comment
Arizona	Supports the federal government providing information (which was unspecified) to states and gas operators
Colorado and Oregon	Advocate more reporting to determine whether federal regulations should be revised
Illinois	Supports a change in regulations that would achieve consistent enforcement across states
Kansas*	Warns that giving customers choice may give them a false sense of security
Missouri	Identifies a problem in giving customers choice
New Jersey	Supports the provision of operating performance data
Ohio and Virginia	Support giving gas operators the sole discretion to install EFVs
South Carolina	Argues that only customers should make the choice of whether or not to install EFVs

Source: Author's construct.



Source: Author's construct.

**Fig. 2:** Opinions of PUCs on Responsible Parties for EFV Installations.

\* Interestingly, the sole Kansas gas operator voluntarily installing EFVs has argued that EFVs, from a safety perspective, are typically more beneficial to excavators than homeowners since EFVs are ineffective against most leakages that occurred within a home.



## SURVEY QUESTIONS

1. *What is your state's EFV installation policy regarding natural gas distribution operators (excluding master metered systems)?*
  - a. \_\_\_ Encourage gas operators to voluntarily install EFVs
  - b. \_\_\_ Require gas operators to install EFVs
  - c. \_\_\_ Require gas operators to comply with current federal regulations
  - d. \_\_\_ Other (explain)
  
2. *Provide a list of natural gas operators in your state who do and do not have a policy of voluntarily installing EFVs. (Attach separate sheet if necessary)*
  
3. *Does your agency assemble data on the number of EFV installations?*  
 Yes \_\_\_ No \_\_\_ If yes:
  - a. How many EFVs are currently installed in your state?  
\_\_\_\_\_
  - b. How many were purchased by customers? \_\_\_\_\_
  - c. How many were voluntarily installed by the operator?  
\_\_\_\_\_
  
4. *How do natural gas operators who voluntarily install EFVs recover their costs?*
  - a. \_\_\_ Capital costs are recovered in the rate base
  - b. \_\_\_ Expenditure item
  - c. \_\_\_ Other
  
5. *Which of the following conditions would cause an operator in your state to **exclude** installation of an EFV on a service line?*
  - a. \_\_\_ Inadequate line pressure
  - b. \_\_\_ Presence of contaminants in the gas stream
  - c. \_\_\_ Other (explain)
  
6. *What is the gas line pressure level or threshold at which your agency considers EFVs to be effective?*
  - a. \_\_\_ Higher than or equal to 10 psig
  - b. \_\_\_ Other (explain)
  
7. *Does your agency assemble data on EFV operating performance?*  
 Yes \_\_\_ No \_\_\_ If yes:
  - a. How many incidents have occurred on lines containing EFVs? \_\_\_\_\_
  - b. How many have had gas flow successfully terminated by activation of the EFV?  
\_\_\_\_\_
  - c. How many false closures have occurred? \_\_\_\_\_
  
8. *According to the data from item #7, is there evidence that any particular type or brand of EFV has been more reliable?*  
 Yes \_\_\_ No \_\_\_ If yes please explain:
  9. *Do you feel that the federal regulations on EFVs are working satisfactorily, or would you like to see changes in the federal regulations? If changes are desired, what would they be?*
  
10. *Who do you think should be responsible for determining if an EFV needs to be installed on a new or renewal service line?*
  - a. \_\_\_ Customer
  - b. \_\_\_ Natural gas operator
  - c. \_\_\_ State agency
  - d. \_\_\_ Federal government

# INDIVIDUAL PUC RESPONSES TO SURVEY QUESTIONS

## 1. What is your state’s EFV installation policy regarding natural gas distribution systems?

State	Response
Alabama	Require gas operators to comply with current federal regulations
Alaska	Require gas operators to comply with current federal regulations
Arizona	Require gas operators to comply with current federal regulations
Arkansas	Require gas operators to comply with current federal regulations
California	Require gas operators to comply with current federal regulations
Colorado	Encourage gas operators to voluntarily install EFVs
Connecticut	Require gas operators to comply with current federal regulations, plus encourage gas operators to voluntarily install EFVs
Delaware	Require gas operators to comply with current federal regulations
District of Columbia	Require gas operators to comply with current federal regulations
Florida	Require gas operators to comply with current federal regulations, plus encourage gas operators to voluntarily install EFVs
Georgia	Require gas operators to comply with current federal regulations
Idaho	Require gas operators to comply with current federal regulations
Illinois	Encourage gas operators to voluntarily install EFVs
Indiana	Require gas operators to comply with current federal regulations, plus encourage gas operators to voluntarily install EFVs
Iowa	Require gas operators to comply with current federal regulations
Kansas	Require gas operators to comply with current federal regulations
Kentucky	Require gas operators to comply with current federal regulations
Louisiana	Require gas operators to comply with current federal regulations
Maine	Encourage gas operators to voluntarily install EFVs
Maryland	Require gas operators to comply with current federal regulations
Massachusetts	Require gas operators to comply with current federal regulations
Michigan	Require gas operators to comply with current federal regulations, plus encourage gas operators to voluntarily install EFVs
Minnesota	Require gas operators to comply with current federal regulations, plus encourage gas operators to voluntarily install EFVs
Mississippi	Require gas operators to comply with current federal regulations
Missouri	Require gas operators to comply with current federal regulations
Montana	Require gas operators to comply with current federal regulations
Nebraska	Require gas operators to comply with current federal regulations
Nevada	Require gas operators to comply with current federal regulations
New Hampshire	Encourage gas operators to voluntarily install EFVs
New Jersey	Require gas operators to comply with current federal regulations
New Mexico	Require gas operators to comply with current federal regulations
New York	Require gas operators to comply with current federal regulations
North Carolina	Require gas operators to comply with current federal regulations
North Dakota	Require gas operators to comply with current federal regulations
Ohio	Require gas operators to comply with current federal regulations
Oklahoma	Require gas operators to comply with current federal regulations
Oregon	Require gas operators to comply with current federal regulations
Pennsylvania	Require gas operators to comply with current federal regulations, plus encourage gas operators to voluntarily install EFVs
Rhode Island	Require gas operators to comply with current federal regulations
South Carolina	Require gas operators to comply with current federal regulations
South Dakota	Require gas operators to comply with current federal regulations
Tennessee	Require gas operators to comply with current federal regulations
Texas	Require gas operators to comply with current federal regulations
Utah	Require gas operators to notify customers of availability of EFVs
Vermont	Require gas operators to comply with current federal regulations
Virginia	Require gas operators to comply with current federal regulations
Washington	Require gas operators to comply with current federal regulations
West Virginia	Require gas operators to comply with current federal regulations
Wisconsin	Require gas operators to comply with current federal regulations, plus encourage gas operators to voluntarily install EFVs
Wyoming	Require gas operators to comply with current federal regulations

**2. Which natural gas operators in your state do and do not have a policy of voluntarily installing EFVs?**

State	Response
Alabama	5 out of 118 operators voluntarily install EFVs
Alaska	The two regulated gas operators allow customers to choose
Arizona	No gas operator voluntarily installs EFVs
Arkansas	1 out of 10 gas operators voluntarily installs EFVs
California	Only PG&E voluntarily installs EFVs
Colorado	Only one gas operator, City of Colorado Springs, voluntarily installs EFVs; all the privately-owned gas operators, plus all the small municipal gas operators do not
Connecticut	All gas operators (4) voluntarily install EFVs
Delaware	Two gas operators, Conectiv and Chesapeake Utilities, voluntarily install EFVs
District of Columbia	The District's gas operator voluntarily installs EFVs
Florida	All gas operators voluntarily install EFVs
Georgia	8 out of 87 gas operators voluntarily install EFVs
Idaho	None of 3 gas operators voluntarily install EFVs
Illinois	All the largest gas operators (3) voluntarily install EFVs (with NICOR agreeing to install EFVs by the end of 2005), while the other privately-owned gas operators (8) do not (no data is available for municipal gas operators)
Indiana	8 out of 35 gas operators voluntarily install EFVs
Iowa	4 (3 of which are municipal) out of 55 gas operators voluntarily install EFVs
Kansas	Only the state's largest gas operator, Kansas Gas Service, voluntarily installs EFVs
Kentucky	Not available
Louisiana	The state's 2 largest gas operators voluntarily install EFVs
Maine	2 of the 3 regulated gas operators voluntarily install EFVs
Maryland	All gas operators (7), except BG&E, voluntarily install EFVs
Massachusetts	All 11 regulated gas operators voluntarily install EFVs on new services where possible; some operators also install EFVs on renewal services; the DTE has granted waivers from a state regulation requiring curb valves if EFVs are installed instead
Michigan	All the major gas operators, except Aquilli, voluntarily install EFVs
Minnesota	34 out of 39 gas operators voluntarily install EFVs
Mississippi	Not available
Missouri	1 out of 50 gas operators voluntarily install EFVs
Montana	None of the 3 gas operators voluntarily installs EFVs
Nebraska	No gas operator voluntarily installs EFVs
Nevada	The 2 gas operators do not voluntarily install EFVs
New Hampshire	All gas operators (2) voluntarily install EFVs, except one because of low-pressure service lines
New Jersey	All gas operators (4) voluntarily install EFVs
New Mexico	None of the 17 gas operators voluntarily installs EFVs
New York	13 out of 17 gas operators voluntarily install EFVs
North Carolina	2 gas operators (both municipal) out of 13 gas operators voluntarily install EFVs
North Dakota	One gas operator, Xcel Energy, voluntarily installs EFVs; other gas operators install EFVs only at the request of the building owner
Ohio	34 out of 42 gas operators voluntarily install EFVs
Oklahoma	Only one gas operator, Oklahoma Natural Gas Company, voluntarily installs EFVs
Oregon	No gas operator voluntarily installs EFVs
Pennsylvania	Almost all the major gas operators voluntarily install EFV, under specified operating conditions
Rhode Island	The state's only regulated gas operator voluntarily installs EFVs when operationally feasible
South Carolina	No gas operator voluntarily installs EFVs
South Dakota	Only one municipal operator out of 8 gas operators voluntarily installs EFVs
Tennessee	11 out of 114 gas operators voluntarily install EFVs
Texas	Not available
Utah	No gas operator voluntarily installs EFVs
Vermont	The state's only regulated gas operator, Vermont Gas Systems (VGS), voluntarily installs EFVs on all new and replacement services on single family residents; VGS installs EFVs on other services when the capacity of the service allows installation of an EFV; on services with large loads, VGS installs only a curb valve
Virginia	4 gas operators voluntarily install EFVs
Washington	Only NW Natural Gas, out of the 4 gas operators, voluntarily installs EFVs
West Virginia	2 out of 23 gas operators voluntarily install EFVs
Wisconsin	The state's 10 gas operators install EFVs only at the request of customers
Wyoming	No gas operator voluntarily installs EFVs

**3. Do you assemble data on the number of EFV installations? If yes, how many EFVs are currently installed in your state, with a breakdown by those EFVs purchased by customers and EFVs voluntarily installed by gas operators?**

State	Response
Alabama	No
Alaska	No
Arizona	No
Arkansas	Yes; out of 274 EFVs installed, 182 were voluntarily installed by a gas operator
California	No
Colorado	No
Connecticut	Yes; all EFVs ( 35,000) have been voluntarily installed by the gas operator
Delaware	Yes; all EFVs ( 23,295) have been voluntarily installed by the gas operator
District of Columbia	No
Florida	No
Georgia	No
Idaho	No
Illinois	No
Indiana	No
Iowa	No
Kansas	Since February 1999, KGS has voluntarily installed about 68,000 EFVs
Kentucky	No
Louisiana	No
Maine	Yes; 1,358 EFVs have been installed, with 1,350 voluntarily installed by the gas operator
Maryland	No
Massachusetts	Yes; since the mid-1970s 176,722 EFVs have been installed (no breakdown of customer purchases and voluntary gas-operator installations)
Michigan	No
Minnesota	Yes; 113,515 EFVs voluntarily installed by the gas operator, 409 EFVs purchased by customers
Mississippi	No
Missouri	No
Montana	No
Nebraska	No
Nevada	No
New Hampshire	Yes; about 30,000 EFVs have been installed, all voluntarily by gas operators
New Jersey	No
New Mexico	No
New York	No
North Carolina	During the past two years, about 2,000 EFVs (out of 75,000 service lines installed) were voluntarily installed by gas operators
North Dakota	No
Ohio	448,288 EFVs have been installed
Oklahoma	No
Oregon	No
Pennsylvania	Over 200,000 EFVs have been voluntarily installed by the major gas operators
Rhode Island	No
South Carolina	No
South Dakota	No
Tennessee	Yes; out of 72,410 EFVs installed, 67,729 were voluntarily installed by the gas operator
Texas	No
Utah	No
Vermont	No
Virginia	No
Washington	No
West Virginia	No
Wisconsin	No
Wyoming	No

#### 4. How do gas operators who voluntarily install EFVs recover their costs?

State	Response
Alabama	Either as capital costs recovered in rate base or as a expenditure item
Alaska	Not applicable
Arizona	Not applicable
Arkansas	Not applicable, since the only voluntary EFV installer is a municipal operator
California	Capital costs recovered in rate base
Colorado	Capital costs recovered in rate base; for the state's largest gas operator, non-refundable charge for each EFV
Connecticut	Capital costs recovered in rate base; operating costs are recovered as normal operating expenses
Delaware	Capital costs recovered in rate base
District of Columbia	Capital costs recovered in rate base
Florida	For IOUs, capital costs recovered in rate base; for POUs, expenditure item
Georgia	Capital costs recovered in rate base
Idaho	Not applicable
Illinois	Capital costs recovered in rate base
Indiana	Capital costs recovered in rate base
Iowa	Capital costs recovered in rate base
Kansas	Capital costs recovered in rate base
Kentucky	Capital costs recovered in rate base
Louisiana	Capital costs recovered in rate base
Maine	Capital costs recovered in rate base
Maryland	Capital costs recovered in rate base
Massachusetts	Capital costs recovered in rate base
Michigan	Capital costs recovered in rate base
Minnesota	Capital costs recovered in rate base, other costs expensed
Mississippi	Other, if installed operator is billing customers for costs
Missouri	Not applicable
Montana	None currently recover costs, but capital costs would appropriately be recovered in rate base
Nebraska	Not applicable
Nevada	Not applicable
New Hampshire	Capital costs recovered in rate base
New Jersey	Capital costs recovered in rate base
New Mexico	Not applicable
New York	Capital costs recovered in rate base
North Carolina	Consider as an operating expense
North Dakota	Capital costs recovered in rate base
Ohio	The customer
Oklahoma	Capital costs recovered in rate base
Oregon	Not applicable
Pennsylvania	Capital costs recovered in rate base
Rhode Island	Costs recovered in rates
South Carolina	Not applicable
South Dakota	Not applicable
Tennessee	Capital costs recovered in rate base
Texas	Not applicable
Utah	Not applicable
Vermont	Capital costs recovered in rate base
Virginia	Capital costs recovered in rate base
Washington	Capital costs recovered in rate base
West Virginia	Capital costs recovered in rate base
Wisconsin	Capital costs recovered in rate base
Wyoming	Not applicable

**5. What conditions would cause a gas operator in your state to not install an EFV on a service line?**

State	Response
Alabama	Inadequate line pressure or presence of contaminants in the gas stream
Alaska	No data available
Arizona	Nothing suggests justification for the installation of EFVs
Arkansas	Inadequate line pressure or presence of contaminants in the gas stream
California	Inadequate line pressure, locations with branch services, work performed in an emergency or short-lag time situations, or services with more than one meter
Colorado	Inadequate line pressure or presence of contaminants in the gas stream; also, when cost-benefit analysis doesn't justify their use, for example when there are costs because of false closure/reset and possible home damage due to frozen water pipes, reopening after closure when outside of the fitting's operating design parameters
Connecticut	Inadequate line pressure or excessive service-line length for a given pressure; for older EFVs dust was a major contaminant in addition to rubber gaskets causing problems with certain liquids (no longer problems)
Delaware	Inadequate line pressure
District of Columbia	Inadequate line pressure
Florida	Inadequate line pressure or presence of contaminants in the gas stream
Georgia	Presence of contaminants in the gas stream
Idaho	Inadequate line pressure
Illinois	Inadequate line pressure or presence of contaminants in the gas stream
Indiana	Inadequate line pressure or presence of contaminants in the gas stream
Iowa	Inadequate line pressure
Kansas	Inadequate line pressure or presence of contaminants in the gas stream, and if consumers refuse to pay for EFV installation when offered
Kentucky	Inadequate line pressure
Louisiana	Presence of contaminants in the gas stream
Maine	Inadequate line pressure
Maryland	Inadequate line pressure
Massachusetts	Inadequate line pressure
Michigan	Inadequate line pressure or presence of contaminants in the gas stream
Minnesota	Inadequate line pressure
Mississippi	Presence of contaminants in the gas stream
Missouri	Inadequate line pressure, presence of contaminants in the gas stream or if the customer did not request an EFV to be installed
Montana	Unknown
Nebraska	Inadequate line pressure, presence of contaminants in the gas stream or known history of EFV failure
Nevada	Inadequate line pressure, presence of contaminants in the gas stream or branches services
New Hampshire	Inadequate line pressure
New Jersey	Inadequate line pressure, presence of contaminants in the gas stream, pressure fluctuations or commercial and multifamily accounts
New Mexico	Would expect the utility to consider all relevant factors
New York	Inadequate line pressure or presence of contaminants in the gas stream
North Carolina	Temperature of the gas and gas flow
North Dakota	Customer does not want EFV installation
Ohio	Inadequate line pressure or presence of contaminants in the gas stream
Oklahoma	Inadequate line pressure or presence of contaminants in the gas stream
Oregon	Inadequate line pressure or presence of contaminants in the gas stream
Pennsylvania	Inadequate line pressure
Rhode Island	Inadequate line pressure or if a residence is multifamily
South Carolina	Customer does not want EFV installation
South Dakota	Inadequate line pressure or presence of contaminants in the gas stream
Tennessee	Presence of contaminants in the gas stream
Texas	Inadequate line pressure or presence of contaminants in the gas stream
Utah	Don't know
Vermont	Inadequate line pressure
Virginia	Inadequate line pressure or presence of contaminants in the gas stream (operators evaluate if operating conditions of service line allow an EFV to be installed)
Washington	Inadequate line pressure or presence of contaminants in the gas stream
West Virginia	Inadequate line pressure or presence of contaminants in the gas stream
Wisconsin	Inadequate line pressure, presence of contaminants in the gas stream, or other (unspecified) conditions
Wyoming	No conditions would exclude installation of EFVs



**6. What is the gas line pressure level or threshold at which your commission considers EFVs to be effective?**

State	Response
Alabama	Higher than or equal to 10 psig
Alaska	No data available
Arizona	No policy
Arkansas	Higher than or equal to 10 psig
California	Neutral, but led to believe that pressures greater than 10 psig needed for optimal performance of EFVs
Colorado	Higher than or equal to 10 psig
Connecticut	The Department requires gas operators to perform an engineering analysis and develop standards for the conditions under which EFVs are effective without significant risk of false closures; generally, all single family residential customers served at 10 psig or more have an EFV installed on new and replacement services
Delaware	Higher than or equal to 10 psig
District of Columbia	Higher than or equal to 10 psig
Florida	Higher than or equal to 10 psig
Georgia	Higher than or equal to 10 psig
Idaho	The commission has not determined the effectiveness of EFVs
Illinois	Higher than or equal to 10 psig
Indiana	Higher than or equal to 10 psig
Iowa	Higher than or equal to 20 psig
Kansas	Higher than or equal to 10 psig
Kentucky	Higher than or equal to 10 psig
Louisiana	Higher than or equal to 10 psig
Maine	Higher than or equal to 10 psig
Maryland	Higher than or equal to 10 psig
Massachusetts	Higher than or equal to 10 psig
Michigan	Higher than or equal to 10 psig
Minnesota	Higher than or equal to 10 psig
Mississippi	Higher than or equal to 10 psig
Missouri	Higher than or equal to 10 psig (the PSC has not independently determined a "threshold")
Montana	No position taken
Nebraska	Higher than or equal to 10 psig
Nevada	Higher than or equal to 10 psig
New Hampshire	Higher than or equal to 10 psig
New Jersey	Higher than or equal to 10 psig
New Mexico	Adopted federal standards
New York	Higher than or equal to 10 psig
North Carolina	Higher than or equal to 10 psig
North Dakota	Per federal code
Ohio	Higher than or equal to 10 psig
Oklahoma	Higher than or equal to 10 psig
Oregon	Higher than or equal to 10 psig
Pennsylvania	Higher than or equal to 10 psig
Rhode Island	Higher than or equal to 10 psig
South Carolina	Left up to the gas operator
South Dakota	Higher than or equal to 10 psig
Tennessee	Higher than or equal to 10 psig
Texas	Higher than or equal to 10 psig
Utah	Don't know
Vermont	The Department has no position
Virginia	Higher than or equal to 10 psig
Washington	No reply
West Virginia	Higher than or equal to 10 psig
Wisconsin	Higher than or equal to 10 psig
Wyoming	Higher than or equal to 10 psig

**7. Does your commission assemble data on EFV operating performance? If yes, (a) how many incidents have occurred on lines containing EFVs, (b) how many have had gas flow successfully terminated by activation of the EFV, and (c) how many false closures have occurred?**

State	Response
Alabama	No
Alaska	No
Arizona	No
Arkansas	Yes; no incidents on lines with EFVs, no triggering of EFVs, no false closures
California	No
Colorado	No
Connecticut	Yes; no incidents have occurred on lines with EFVs; assembling data over the past 3 years, it is estimated that annually about a 100 EFVs have activated to terminate the flow of gas; false closures are estimated at about 15 per year
Delaware	Yes; EFVs have activated when underground service lines are hit; 10 false closures have occurred
District of Columbia	No
Florida	No
Georgia	No
Idaho	No
Illinois	No
Indiana	No
Iowa	Yes; no incidents on lines with EFVs, no triggering of EFVs, no false closures
Kansas	Evidence showing that in some cases EFV activation almost caused a house explosion; also, for KGS, some EFVs installed early had "spring" problems with the potential for false closures
Kentucky	No
Louisiana	No
Maine	No
Maryland	No
Massachusetts	No
Michigan	No, but according to gas operators there have been a few cases of false closures
Minnesota	Yes; no incidents on lines with EFVs, 66 have successfully terminated gas flow, 90 false closures
Mississippi	No
Missouri	No
Montana	No
Nebraska	No
Nevada	No
New Hampshire	No, but evidence of about 20 severe ruptures on lines with EFVs over a 20-year period with successful termination in all instances, and of less than 4 false closures
New Jersey	No
New Mexico	No
New York	No
North Carolina	No
North Dakota	No
Ohio	No (but several gas operators have informally reported a number of false closures)
Oklahoma	No
Oregon	No
Pennsylvania	No
Rhode Island	No; but we know that EFVs have avoided third-party-damage incidents; we also have had some false closures due to fluctuating gas load
South Carolina	No
South Dakota	No
Tennessee	No
Texas	No
Utah	No
Vermont	No
Virginia	No
Washington	No
West Virginia	No
Wisconsin	No; but indication that less than 15 times EFVs have been activated to successfully terminate gas flow
Wyoming	No

**8. Is there any evidence that any particular type or brand of EFV has been more reliable?**

State	Response
Alabama	No
Alaska	No
Arizona	No
Arkansas	No
California	No
Colorado	No
Connecticut	Yes; spring-plunger type EFVs with nylon plungers have proven successful; older EFVs using the ball and magnet mechanism were found to be sensitive to dust in the pipe
Delaware	No
District of Columbia	No
Florida	No
Georgia	No
Idaho	No
Illinois	No
Indiana	No
Iowa	No
Kansas	Older EFVs with conical springs had the potential to cause false closures; according to Kansas Gas Service, the number of defective EFVs is similar to the number of defects found in manufacturer-assembled service risers or other service-line components
Kentucky	No
Louisiana	No
Maine	No
Maryland	No
Massachusetts	No
Michigan	No
Minnesota	No
Mississippi	No
Missouri	No
Montana	No
Nebraska	No
Nevada	No
New Hampshire	No
New Jersey	No
New Mexico	No
New York	No
North Carolina	No
North Dakota	No
Ohio	No
Oklahoma	No
Oregon	No
Pennsylvania	No
Rhode Island	No
South Carolina	No
South Dakota	No
Tennessee	No
Texas	No
Utah	No
Vermont	No
Virginia	No
Washington	No
West Virginia	No
Wisconsin	No
Wyoming	No

**9. Do you feel that the federal regulations are working satisfactorily? If not, what changes would you like to see?**

State	Response
Alabama	Working satisfactorily
Alaska	Working satisfactorily
Arizona	The federal government should provide information to states and gas operators, who can then select the best action
Arkansas	Working satisfactorily
California	No evidence for change
Colorado	No; an annual report should be required to capture any meaningful/consistent data on EFVs; NARUC must take a position on cost-benefit analysis; a rule change should be considered if supported by the performance data
Connecticut	Indifferent to federal regulations
Delaware	Working satisfactorily
District of Columbia	Working satisfactorily
Florida	Working satisfactorily
Georgia	Working satisfactorily
Idaho	Working satisfactorily
Illinois	A change would be desirable for achieving consistent enforcement across states
Indiana	Working satisfactorily
Iowa	Working satisfactorily
Kansas	In view of cost/benefits studies, working satisfactorily, except that giving homeowners the option may give them a false sense of security because EFVs provide no safety for inside house gas leaks
Kentucky	Working satisfactorily
Louisiana	Working satisfactorily
Maine	Federal regulations should require EFVs when operating conditions exceed minimum design conditions established by the manufacturer
Maryland	Working satisfactorily
Massachusetts	Working satisfactorily
Michigan	Supports mandatory installation of EFVs on all residential medium-pressure services
Minnesota	Supports mandatory installation of EFVs on new/renewed service lines for residential as well as some commercial users, assuming they operate above 10 psig
Mississippi	Working satisfactorily
Missouri	Some concern over giving customers choice; absent data showing EFVs to be cost-beneficial, the current rule should remain in effect
Montana	Working satisfactorily
Nebraska	Working satisfactorily
Nevada	Working satisfactorily
New Hampshire	Federal regulations are a non-factor: gas operators in NH (who are proponents of EFVs) have been installing EFVs since the late 1970s
New Jersey	Working satisfactorily, but operating performance data should be provided
New Mexico	Working satisfactorily
New York	Giving customers choice deters EFV installations; supports mandatory installations on all new and replacement service lines under appropriate operating conditions
North Carolina	Gas operators would like repeal of the federal regulations
North Dakota	Should have mandatory EFV installations on all new or renewed service lines
Ohio	Supports gas operators making the decision on EFV installation, based on their knowledge of the system and the associated risks, not the customer who considers only cost
Oklahoma	No position, since the Commission is prohibited by state law from enacting more stringent rules than federal pipeline-safety regulations
Oregon	Need more information on the performance of existing EFVs to determine whether any change is required
Pennsylvania	Supports a federal law requiring gas operators to install EFVs or require customers to install EFVs prior to hooking up to the local distribution system
Rhode Island	Supports mandatory EFVs installations; EFVs have proven to work; any deaths that could have been avoided with EFV installations reflect regulatory failure
South Carolina	EFVs should be installed at only the customer's request; present regulations are more than adequate
South Dakota	Current regulations are working satisfactorily
Tennessee	Current regulations are working satisfactorily
Texas	Current regulations are working satisfactorily
Utah	Current regulations are working satisfactorily
Vermont	Current regulations are working satisfactorily
Virginia	Current regulations are working satisfactorily (decision to install EFVs, however, should lie with the gas operator)
Washington	Current regulations are working satisfactorily
West Virginia	Current regulations are working satisfactorily
Wisconsin	Current regulations are working satisfactorily
Wyoming	Current regulations are working satisfactorily

**10. Who should be responsible for determining whether an EFV needs to be installed on a new or renewed service line?**

State	Response
Alabama	Federal government
Alaska	Customer
Arizona	Natural gas operator
Arkansas	Customer and natural gas operator
California	State agency
Colorado	Natural gas operator
Connecticut	State agency
Delaware	Natural gas operator
District of Columbia	Customer and natural gas operator
Florida	Customer and natural gas operator
Georgia	Natural gas operator
Idaho	Customer
Illinois	Federal government
Indiana	Natural gas operator
Iowa	Customer and natural gas operator
Kansas	Customer
Kentucky	Natural gas operator
Louisiana	Natural gas operator
Maine	Natural gas operator, state agency and federal government
Maryland	Federal government
Massachusetts	Natural gas operator
Michigan	Natural gas operator, state agency and federal government
Minnesota	Federal government
Mississippi	Customer
Missouri	Natural gas operator, state agency and federal government
Montana	Natural gas operator
Nebraska	Customer
Nevada	Customer
New Hampshire	Natural gas operator and state agency
New Jersey	Natural gas operator
New Mexico	Customer
New York	Federal government (this would ensure that EFVs are installed consistently nationwide)
North Carolina	Customer
North Dakota	Customer and natural gas operator
Ohio	Natural gas operator
Oklahoma	No position
Oregon	Customer
Pennsylvania	Natural gas operator
Rhode Island	Federal government should mandate EFV installations, with the gas operators deciding where the EFVs can work properly from an engineering perspective
South Carolina	Customer
South Dakota	Customer
Tennessee	Natural gas operator
Texas	No response
Utah	Customer and natural gas operator
Vermont	Natural gas operator
Virginia	Natural gas operator
Washington	Customer, assuming the availability of appropriate information
West Virginia	Natural gas operator
Wisconsin	State agency
Wyoming	Customer

## Notes

<sup>1</sup> For example, in 2004 the total residential use of natural gas in Hawaii was only 524 MMcf, which is considerably lower than that for any of the other states.

<sup>2</sup> The fundamental economic criteria for evaluating any public policy is whether it would maximize societal net benefits. This involves a three-step procedure. First, a determination has to be made that the alleged market failure is serious enough to justify government intervention. A valid argument can be made that safety measures to prevent a fire or gas explosion in the presence of both third-party effects or asymmetric information (i.e., customers having less information than the gas utility to make an informed decision) can warrant some form of government action, or at least some action falling outside the sole discretion of the customers themselves. Second, a benefit-cost study should indicate that the benefits exceed the costs. A study done by the Volpe Center showed the benefits of a mandatory EFV regulation to fall far short of the costs, even under assumptions favorable to EFVs. (In the base case, the benefit-cost ratio was calculated as 0.29.) Better data would seem not to change the qualitative conclusion that EFVs are not cost-beneficial. An early-1990s study by GRI came up with similar results, adding that the benefit/cost ratio for an individual gas distribution system depends on operational conditions, location and gas pipes characteristics. In a summary statement of the study, it was concluded that “the decision to use EFVs should be left to individual companies after performing their own cost benefit analysis, which should include *an assessment of alternative accident mitigation measures*.” (Emphasis added) Third, even if a policy measure is found to be cost-beneficial, to pass muster it should also be cost effective. Since gas operators have limited resources, it should choose only those safety initiatives which are the least expensive to implement. For example, even if EFVs are found to be cost-beneficial, they may be more expensive than other safety initiatives achieving a comparable outcome. One promising way to determine the relative cost-effectiveness of alternative safety measures would be through a risk-assessment approach.

<sup>3</sup> Conceptually, a safety mandate imposed by government requires that the market has failed to deal with a particular problem. (Safety regulations can be viewed as attempts to control externalities – spillovers from normal business activities – that compromise or imperil safety.) For example, the market may not take into account the third-party effects of an incident or the lack of precise information accessible to customers may prevent them from making informed decisions. For these reasons, there might be some justification for government intervention with regard to EFVs but not necessarily in the form of a command-and-control mandate. As an illustration, when a customer makes a decision whether or not to install an EFV on her service line, she takes into account the potential effects on her, including property damage and lost of life or injury, but probably not on the consequences for her neighbors. In other words, by not considering the effects of an incident on her neighbors, the customer will under-estimate the aggregate societal benefits from her decision to purchase an EFV. The end result is that, from a societal perspective, consumers would tend to under-purchase EFVs. The observation that relatively few customers purchase EFVs can perhaps best be explained by the actual information provided to them by the gas operator. The gas operator may be informing these customers, that although installing an EFV is not expensive, EFVs may not operate properly causing inadvertent shut off of gas service or may result in future maintenance or replacement costing the customer several hundred dollars.

<sup>4</sup> There is no evidence that states have not been vigilant in overseeing gas operators’ practices to ensure that they are complying with federal regulations, for example, by notifying customers of new and renewed services of the availability of EFVs. Presumably gas operators are either voluntarily installing EFVs or are notifying customers of their availability. In other words, since gas operators are apparently complying with federal regulations, commissions are limited to either encouraging or mandating EFV installations if, in fact, they have the authority. One state, Oklahoma, reported that the commission is prohibited by state law from enacting rules stricter than federal pipeline-safety regulations.

<sup>5</sup> One gas operator, Consumers Energy in Michigan, decided in 1999 that voluntarily installing EFVs is justified on the basis of risk assessment and benefit-cost analysis. Specifically, Consumers Energy had determined that installing EFVs would avoid the costs of (1) identifying and notifying customers, (2) responding to customers’ questions and (3) reporting requirements. Consumers Energy also considered the problem of potential liability from implementing a rule based on customer choice. (See [http://www.pipe-line.com/archive/archive\\_99-06/99-06\\_consumers-willson.htm](http://www.pipe-line.com/archive/archive_99-06/99-06_consumers-willson.htm).) In general, a gas operator would have an incentive to make the best use of EFVs to avoid incidents, to maintain a positive safety record, to increase customer satisfaction, to avoid negative publicity, in addition to deriving economic benefit from lessened insurance premiums and the potential liabilities that could arise.

<sup>6</sup> With regard to customer non-responsiveness, the first thought that comes to mind is that households simply place a small value on EFVs. Whether they have precise information on the benefits and costs of EFVs is highly questionable. It can be assumed that utilities are not misinforming them about EFVs but perhaps the information conveyed to customers is too imprecise (especially about the benefits) for a customer to commit herself to purchasing an EFV. Customers may be also discouraged from purchasing EFVs because of their responsibility for future maintenance and replacement (for example, digging up a yard to get at a malfunctioning EFV, which can cost the customer several hundred dollars). One western gas utility conveys to customers that “the cost of removing or replacing an EFV could range from \$250 to \$10,500,” which the customer would be responsible for. Perhaps another explanation for the low customer response lies with the decision of home builders to not purchase EFVs. Home builders, who often decide whether or not to purchase EFVs for new service lines (say) in a new subdivision, may find little benefits from EFVs: since builders would invariably perceive little safety benefits compared, say, with the homeowner herself, they may be inclined to not purchase EFVs even though their installation costs may be incremental.

<sup>7</sup> It is unclear whether these responses reflect the views of the pipeline safety expert, the views of the commission chair or the official position of the commission. A regulation mandating the installation of EFVs represents what is generically referred to as a command-and-control, technology-based form of regulation. Such regulations have frequently been found in empirical studies to result in wasteful costs because they preclude the possibility of less costly options that could attain a comparable objective. For example, the overall safety of a gas distribution system depends on a myriad of actions, one of which could involve the installation of EFVs. Other actions conceivably could be done more cheaply than installing EFVs and yet obtain the same or higher safety level for a gas distribution system. By assessing various safety actions and identifying those which are most effective and cheapest, say, within a risk-assessment framework, the gas operator would be cost-effectively expending its scarce resources.

<sup>8</sup> With regard to safety regulations, there is the generic question of how responsibility over safety should be divided between federal regulators, state regulators, the consumer, the firm and the courts. This issue is obviously pertinent in the ongoing policy dialogue on EFVs.



<sup>9</sup> Whether encouraging gas operators to voluntarily install EFVs has resulted in responsive action by gas operators is not altogether clear from the survey results for the eleven states. For example, in one of these states only one gas operator voluntarily installs EFVs, in another state eight out of thirty-five gas operators do, in a third state three out of eleven gas operators do, while in a fourth state none of the ten gas operators voluntarily installs EFVs.

<sup>10</sup> Out of the 699 gas operators in those states 161 voluntarily install EFVs.

<sup>11</sup> For example, Kansas reported the number of EFVs for one gas operator and North Carolina reported the number of EFVs installed over only the past two years.

<sup>12</sup> The states reporting this information are Arkansas, Connecticut, Delaware, Maine, Minnesota, New Hampshire, and Tennessee. In Minnesota, for example, it was reported that out of the 113,924 EFVs installed only 409 were purchased by customers. For these seven states collectively, it was reported that gas operators voluntarily installed 271,071 EFVs out of the 276,261 EFVs installed in those states.

<sup>13</sup> Yet in Tennessee less than 7 percent of the total EFVs installed are purchased by customers.

<sup>14</sup> Pennsylvania only reported the number of EFVs voluntarily installed by gas operators. The only other state reporting the number of EFVs installed to exceed 100,000 was Minnesota.

<sup>15</sup> Although precise numbers are not available, it can be inferred from the responses to the second survey question (“Provide a list of natural gas operators in your state who do and do not have a policy of voluntarily installing EFV.”) that an extremely high percentage of EFV installations in the three states, namely Ohio, Pennsylvania and Massachusetts, are voluntarily done by gas operators.

<sup>16</sup> Other factors reported were non-operational in nature. For example, Colorado commented that EFVs should not be installed when they fail to pass a cost-benefit test. With the benefit of hindsight, the survey question should have specified “operating conditions,” rather than just “conditions.”

<sup>17</sup> Seven states said they did not know, or have no policy concerning, the minimum gas-line pressure required for EFVs to be effective.

<sup>18</sup> As indicated in footnote no. 7, it is unknown whether these are official positions of the commissions or simply the views of an individual working for a commission.

<sup>19</sup> One state took no position, a second state reported indifference to federal regulations, a third state reported that gas operators would like repeal of the federal regulations, while a fourth state reported that federal regulations are not a factor since all gas operators in its state (except for one because of low-pressure service lines) have been voluntarily installing EFVs since the late 1970s.

<sup>20</sup> A theoretical argument can be made that the decision of whether to install an EFV should not be left up to individual customers. For example, a customer may not be able to make an informed decision, given the availability of imprecise information, and customers would not be expected to consider the “external” effect in reaching a decision (i.e., a customer would not take into account the effect of an explosion caused by a gas leak on her neighbors). Finally, it can be argued that the safety of a distribution system should be a matter only for gas operators. This view seems more valid when deciding on what physical components should be incorporated into a gas distribution network that would achieve an appropriate level of safety.

<sup>21</sup> Two states did not specify who should be the decision-maker and one state answered that the gas operator and the state agency should be the responsible parties.

### **The National Regulatory Research Institute**

1080 Carmack Road  
Columbus, Ohio 43210-1002

Phone: 614-292-9404

Fax: 614-292-7196

[www.nrri.ohio-state.edu](http://www.nrri.ohio-state.edu)

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