

Process Safety Management and California Accidental Release Prevention Program

Proposed Regulations

Standardized Regulatory Impact Assessment (SRIA)

The State of California has proposed revised Process Safety Management (PSM) and California Accidental Release Prevention Program (CalARP) regulations for oil and gas refineries that operate in California. The proposed regulations are more stringent than current federal regulations and are intended to improve refinery worker and public safety, and reduce air pollution.

The RAND Corporation assessed the costs and benefits of the proposed PSM and CalARP regulations. RAND estimated these costs and benefits in four categories: the costs to industry (to implement the regulation), the costs to society (pass through of certain industry costs), benefits to industry, and benefits to society. The results of the analysis are detailed below, respective to the SRIA requirements. A [full detailed analysis](#) is available online.

Background

The federal Clean Air Act Amendments of 1990 [42 U.S.C. §7412(r)] directed the federal Occupational Safety and Health Administration (OSHA) and the United States Environmental Protection Agency (EPA) to develop regulations to prevent accidental chemical releases. These became known as the PSM and Risk Management Plan (RMP) regulations, respectively. On February 24, 1992, OSHA published a Final Rule for *Process Safety Management of Highly Hazardous Chemicals* (57, Fed. Reg., 6356, February 24, 1992), codified as 29 CFR Section 1910.119.

The Department of Industrial Relations (DIR) subsequently adopted a PSM standard (CCR Title 8, §5189) pursuant to its mandate to adopt standards that are at least as effective as federal standards. Section 5189 is substantially the same as the federal counterpart, in that it addresses the prevention of catastrophic releases of toxic, reactive, flammable, and explosive chemicals and applies to employers who use a process involving a particular chemical (or chemicals) at or above certain threshold quantities (listed in Appendix A) or a flammable liquid or gas as defined in subsection (c) of the regulation.

Since 1992, California's PSM standard has covered approximately 1,500 facilities in the state that handle or process certain hazardous chemicals including its 15 active oil refineries, which process approximately two million barrels of crude oil per day into gasoline, diesel fuel, jet fuel, and chemical feedstocks.

U.S. EPA adopted the federal Chemical Accident Prevention Provisions, also known as the Risk Management Plan Rule, in 1996. California had previously adopted its own accidental release prevention program, which was revised in 1997 to reflect the new federal program, resulting in the current California Accidental Release Prevention Program (Cal. Health & Saf. Code, § 25531 et seq.). The CalARP program operates in parallel to the federal Chemical Accident Prevention Provisions with certain

additional state specific requirements. Cal OES administers CalARP as part of the state's Unified Hazardous Waste and Hazardous Materials Management Program, and local Certified Unified Program Agencies implement the program at the local level. The purpose of the CalARP program is to prevent accidental releases of substances that can cause serious harm to the public and the environment, to minimize the damage if releases occur, and to satisfy community right-to-know laws.

Following a chemical release and fire at the Chevron refinery in Richmond, CA, on August 6, 2012, the Governor's Interagency Working Group on Refinery Safety prepared a report raising concerns and recommendations about the safety of California's oil refineries. The report recommended the establishment of an Interagency Refinery Task Force to: (1) coordinate revisions to the state's PSM regulations and California Accidental Release Program (CalARP) regulations; (2) strengthen regulatory enforcement; and (3) improve emergency preparedness and response procedures.

In accordance with the recommendations of the report, Cal/OSHA, a division of DIR, is promulgating a new PSM regulatory proposal for oil refineries, GISO §5189.1. CalOES is also promulgating proposed CalARP regulations that are in alignment. The regulatory proposal is consistent and compatible with existing state regulations. The proposal implements the recommendations of the report and other elements that safety experts have learned over the past two decades are essential to the safe operation of a refinery and include: applying a *hierarchy of controls* to implement first- and second-order inherent safety measures; conducting *damage mechanism reviews*; applying rigorous *safeguard protection analyses*; integrating *human factors* and *safety culture assessments* into safety planning; *involving front-line employees* in decision-making; conducting *root-cause analysis* following significant incidents; and performing comprehensive *process hazard analyses*.

The refineries operating in California have adopted many of these practices over the past decade, with significant improvements in safety performance; however, the industry continues to experience significant upset events.¹

The regulatory proposal sets safety performance standards for refineries and ensures that those standards are met through improvements in transparency, accountability, worker participation, and enforcement.

The creation or elimination of jobs in the state.

The proposed PSM and CalARP regulations will create an estimated 158 jobs in the state's petroleum refining sector (between 57 and 325 jobs), based on an estimated total compensation (generated by

¹ U.S. Department of Energy, Office of Electricity Delivery and Energy Reliability, *Energy Assurance Daily*, available at <http://www.oe.netl.doe.gov/ead.aspx> (accessed December 9, 2014). (Note: For weekly summaries, go to "Download EADs" and scroll to "Petroleum.")

IMPLAN) in the California refinery sector of \$334,000 per employee and a total increase in labor costs of \$58 million.

The creation of new businesses or the elimination of existing businesses in the state.

There is no anticipated creation or elimination of businesses in California.

The competitive advantages or disadvantages for businesses currently doing business in the state.

Based on the economic modeling, refiners in California complying with the proposed PSM regulations will experience the advantage of cost avoidance due to the reduced likelihood and severity of a major refinery incident, such as the ExxonMobil incident in Torrance in 2015. This will reduce the cost associated with lost output, which in the ExxonMobil incident had an estimated value of \$323 million (not including the additional equipment repair costs, which could not be estimated).

The increase or decrease of investment in the state.

Multiple stakeholder and advisory meetings with labor, industry, advocacy groups, and other agencies have contributed to the development of the proposed regulations. All input has been considered, and the current proposed regulations reflect a balanced, enforceable, and prevention-focused approach to reducing risks in this industry. There is no indication that the regulations will affect investment in California.

The incentives for innovation in products, materials, or processes.

The proposed regulations require the establishment of several programs that drive refiners to analyze and implement processes and select materials that offer the highest levels of risk reduction. The inherent safety requirements promote an approach to safety that focuses on eliminating or reducing the hazards associated with certain conditions. A process is inherently safer if it eliminates or reduces the hazards associated with materials or operations used in the process, and this elimination or reduction is permanent and inseparable from the material or operation. A process with eliminated or reduced hazards is described as inherently safer than a process with only passive, active, or procedural safeguards. The process of identifying and implementing inherent safety in a specific context is known as “inherently safer design.” Examples of how innovation is incentivized are described in the prioritized approaches to safety:

- First-Order Inherent Safety Measure—a measure that eliminates a hazard. Changes in the chemistry of a process that eliminate the hazards of a chemical are usually considered first-order inherent safety measures—for example, by substituting a toxic chemical with an alternative chemical that can serve the same function but is nontoxic.

- Second-Order Inherent Safety Measure—a measure that effectively reduces risk by reducing the severity of a hazard or the likelihood of a release, without the use of additional safety devices. Changes in process variables to minimize, moderate, and simplify a process are usually considered second-order inherent safety measures—for example, by redesigning a high-pressure, high-temperature system to operate at ambient temperatures and levels of pressure.

The benefits of the regulations, including, but not limited to, benefits to the health, safety, and welfare of California residents, worker safety, environment and quality of life, and any other benefits identified by the agency.

The proposed regulations may improve safety at California refineries, which will in turn result in fewer major process incidents and fewer releases of hazardous materials from refineries. Because the number of major refinery incidents may be reduced under the proposed regulation, it could provide safety and health benefits to workers and the public in nearby communities as well as other economic benefits for businesses. The proposed regulations will also increase the openness and transparency of business and government.

Methodologies

Assessing and determining the benefits and costs of the proposed regulation, expressed in monetary terms to the extent feasible and appropriate.

Costs to Industry

The total implementation costs were estimated for all the refineries in California by aggregating estimates. The quality of data reported for one-time, upfront costs was much lower than that reported for ongoing costs. The majority of refiners indicated upfront costs that were relatively minor compared to ongoing costs—about 20% to 80% of a single year’s cost. One refiner reported anticipating extremely significant startup costs in a single category—this outlier estimate is discussed separately. Because ongoing costs made up the bulk of the reported costs and were reported more consistently by refiners, the following analysis focuses on these ongoing costs.

Types of Costs Considered for Implementation of the Proposed Regulations

The additional costs that would be incurred by industry to comply with the proposed regulations were also considered and calculated. Costs were calculated in ten major areas covered by the regulations: Safety Training, Damage Mechanism Review (DMR), Root Cause Analysis (RCA), Hierarchy of Hazard Controls Analysis (HCA), Process Safety Culture Assessment (PSCA), Program Management, Performance Indicators, Human Factors, Safeguard Protection Analysis/Layers of Protection Analysis (SPA/LOPA), Process Hazard Analysis (PHA), and Other Costs (or undifferentiated costs). Refiners’ estimates were

taken essentially at face value as good-faith estimates of cost from those in the best position to understand them.

Only costs attributed to the proposed regulations were aggregated. In some cases, refiners reported the total cost of programs that are already in place and that the new regulations might make more expensive. In these cases, only the additional expense was included in the aggregate expense. Similarly, safety-related initiatives already underway that are not directly mandated by the regulations were excluded from the tabulation of costs of the proposed regulations.

Methods Used to Obtain Average, High, and Low-Cost Estimates

Variation between these estimates was used as the basis for estimating the range of actual costs—assuming that some refiners might miss the mark at either the low or high end. To produce the range of possible costs, each refiner’s cost was first normalized by the size of the refinery, measured in barrels per day (BPD) of capacity. Refiners were then ranked in terms of cost by their cost per unit of capacity. The 10th and 90th percentiles of cost were estimated—corresponding to the second-lowest and second-highest cost estimates—and applied to all refiners according to their capacity measured in BPD.

Refiner-reported cost estimates were between \$9 and \$37 per unit of production capacity. Two refiners produced higher estimates, one at \$90 per unit and one at \$187 per unit. All reported estimates were assumed to be good-faith estimates of refiner cost. Although some refiners might face different costs because they have to make a greater or lesser effort in order to meet the proposed requirements, a close reading of the survey responses indicates that this is not the major source of variation in estimates. Rather, it appears that much of the variation stems from different understandings of how the regulations should be interpreted and enforced; some refiners anticipate comparatively minor changes relative to current industry practice, while others anticipate major changes.

The variation in refiner estimates is thus treated as a measure of the uncertainty of this final refiner cost. From this perspective, the estimates reported by the refiners can be thought of as a “best” or average cost estimate. We take the 10th percentile (second lowest) and 90th percentile (second highest) estimates as the likely lower and upper bounds of this cost. Most estimates cluster at the lower end of this range, with much of the probability falling near the best estimate, from \$20 to \$35 per unit.

Results

Summing costs from all refiners produces a best estimate of \$58 million per year (M/y) for refiners to maintain compliance with the proposed regulations, from a low of \$20 M/y to a high of \$183 M/y.

The largest cost categories are Hierarchy of Controls Analysis (HCA) at \$12.7 M/y, Damage Mechanism Review (DMR) at \$12.3 M/y, and Root Cause Analysis (RCA) at \$9.2 M/y. Safeguard Protection Analysis (SPA/LOPA) at \$6.7 M/y, Safety Training at \$3.2 M/y, Process Safety Culture Assessment (PSCA) at \$2.9

M/y, and Human Factors (HF) at \$2.9 M/y make up a second tier of cost in the range of \$3 M/y to \$7 M/y. Process Hazard Analysis (PHA) at \$1 M/y, Program Management (PM) at \$845,000 per year, and Performance Indicators (PI) at \$400,000 per year comprise a third tier of cost at or below \$1 M/y industry-wide. The Other cost category (\$5.3 M/y) reflects primarily data that were reported in an aggregated form and cannot be broken into the stated categories without making unwarranted inferences, rather than actual costs that do not fall into the above-stated categories.

Estimates of Startup Costs

Although the estimates of most refiners were reasonably consistent with one another, several refiners anticipated costs that were much higher in certain categories. In some cases, it was possible to determine that the anomalous numbers were the result of a misunderstanding of the question being asked—for instance, a report of the total cost of a program, rather than the increase in that program's cost that could be attributed to the regulations. Problems of this sort were minimal, however, because of the extensive meetings to clarify the intent of the questions that were conducted before the refiners prepared their responses. In other cases, these answers, though anomalous, were within the bounds of the study: they did not seem to represent any kind of misunderstanding of the question; instead, they seem to represent either a legitimate difference in the costs faced by certain refiners or a legitimate difference in judgment with regard to how the regulations will be implemented and how much it might cost to comply with them. All answers regarding the ongoing cost of compliance have been incorporated into the estimates presented here. Differences in opinion along these lines have been taken as a healthy part of the estimation process to estimate a range of possible implementation costs.

Most refiners did not view startup costs as a major component of the costs of the proposed regulations, with most of the cost being the ongoing costs of operating facilities as required by the new regulations. Under most refiners' estimates, the first one to five years may cost more than subsequent years by a factor of 1.2 to 2 (with estimates tending to fall at lower end of that range).

The SRIA process surfaced instances of confusion regarding the provisions of the proposed regulations. Subsequent revisions helped to clarify the proposed requirements.

Costs to Society

Assuming that additional regulatory costs will be passed on to consumers through higher gasoline prices and that the demand for gasoline is perfectly inelastic, the price impact of the proposed regulations can be estimated. In recent years, gasoline consumption in California has averaged about 14.5 billion gallons per year.

California requires a unique reformulated gasoline blend to meet the state's pollution control requirements. Gasoline made in other states to meet other state and federal pollution requirements does not meet California standards. Consequently, all gasoline consumed in California is typically refined

in the state. Therefore, California refiners' cost of implementing the proposed regulations can be distributed over the cost to consumers of purchasing 14.5 billion gallons of California gasoline.

Spreading the \$58 million estimated cost of the regulations across this volume of sales indicates an increase in price of about \$0.004, or slightly less than half a cent per gallon. The lower estimate of \$20 million reduces this impact to \$0.0014 or about 1/7 of a cent, while the upper estimate of \$183 million increases the impact to \$0.013, or 1.3 cents per gallon. Aggregating this to calculate the impact on the average adult Californian yields an estimated cost per person of about \$2 per year, with a low estimate of \$0.68 and a high estimate of \$6.20 per person per year.

The larger economic impacts of this cost on the California economy are mixed. After applying these costs to a standard input-output model for the state, we observe that this cost is more than offset by the additional refiner spending on labor that drives the higher costs. The net stimulatory effect of the additional spending by refiners would be slightly greater than the inhibiting effect of higher gas prices.

Benefits to Industry: Safety Improvements

Safety improvements may result from implementing the proposed regulation. These safety improvements could reduce the number of major refinery incidents at California refineries. The Contra Costa County Industrial Safety Ordinance (ISO) was used as a proxy for the purpose of estimating the proposed regulations (although the proposed regulations go further than the current ISO in terms of risk reduction requirements, rendering this a very conservative estimate). It is not unreasonable to assume that California refinery incident rates under the proposed regulation will be similar to or lower than those of ISO refineries. When analyzed, the incident rate for major incidents was significantly less (about three times lower) for ISO refineries when compared to the incident rate for non-ISO refineries operating in the state of California.

The analysis of the proposed regulations indicated no reduction in the long-term operating costs of California refineries.

Benefits to Industry: Costs Avoided

Safety improvements may result from implementing the proposed regulation. These safety improvements could reduce the number of major incidents at California refineries. Thus the proposed regulation benefits industry by reducing the costs of major incidents in the future. A benefit to industry is the reduction in costs of major incidents in the future. At least three refinery incidents with macroeconomic impact of greater than \$1.5 billion on the California economy have occurred since 1999. The average cost of such an incident to the refiner that suffers the incident is at least \$220 million. Using an ExxonMobil incident in 2015 as an example, the cost to ExxonMobil for a six-month period is estimated at \$323 million, not including other likely costs, such as equipment repair or damage to its reputation.

Benefits to Society: Costs Avoided

In quantitative terms, the largest potential benefit of the proposed regulations is the avoided cost of supply disruption related to a future major refinery incident. Gasoline prices in California, because of the 2015 ExxonMobil 2015 incident, cost California drivers nearly \$2.4 billion, in the form of a prolonged \$0.40 increase per gallon at the pump. Macroeconomic analysis indicated that lost supply associated with this one incident cost the California economy \$6.9 billion. If the ExxonMobil event continues beyond six months, such as up to the predicted 12 months, the costs could double in the absence of the availability of alternate reserves in California.

Assessing the value of nonmonetary benefits, such as the protection of public health and safety, worker safety, or the environment, the prevention of discrimination, the promotion of fairness or social equity, an increase in the openness and transparency of business and government and other nonmonetary benefits is consistent with the statutory policy or other provisions of law.

The nonmonetary benefits from these regulations and their ability to reduce the risk of refinery incidents include the protection of health and safety for workers and the public, as well as the environment. Non-economic benefits for residents would also accrue, as they are less likely to be injured or die in refinery incidents. The same is true for the injury and illness rates, as well as fatalities, of the refinery workers. Analysis suggests that the proposed regulations could lead to a refinery worker death rate over three times lower, assuming that the ISO rate is a conservative proxy for the proposed regulations. Several other anticipated costs are avoided for industry that could not be reliably estimated, such as refinery equipment repair and damage to the company's reputation, which can be considerable depending on the incident. Costs avoided also include those from overseas production of reformulated California gasoline, as well as related transportation costs to make these reserves available. Californians would benefit by avoiding costs incurred by residents who live near refineries affected by incidents, such as emergency services, health care, reduction in property values, and reduction in tax revenue to local governments.

Determining the impact of a regulatory proposal on the state economy, businesses, and the public welfare, as described in subdivision (c) of Section 11346.3.

The IMPLAN model was used to assess the secondary, macroeconomic impacts on the California economy of both the cost of the proposed regulations and the cost (to be avoided) of a major refinery incident. These estimated costs of the proposed regulations, while substantial in absolute terms, are small relative to the size of the industry (\$131 billion per year and the fourth-largest industry by output in the state). The best estimate of \$58 million is only four-tenths of 1 percent of industry revenue not devoted to inputs and about one-twentieth of 1 percent of industry revenue overall. IMPLAN estimates total compensation in the California refinery sector at about \$334,000 per employee. The best estimate

of \$58 million in additional labor costs therefore implies the creation of about 158 jobs in the petroleum refining sector if the major source of costs is additional labor.

Assessing the effects of a regulatory proposal on the General Fund and special funds of the state and affected local government agencies attributable to the proposed regulation.

The PSM regulations are user funded based on a formula that considers barrels of crude oil in terms of inputs and partially processed receipts as a percentage of the state's total. This new assessment on California's oil refineries was implemented by Governor Brown in 2013 and is independent of the state's General Fund. Currently, the petroleum refineries that would be affected by the proposed regulations pay an annual Unified Program fee for implementation of the program. The proposed regulations would not adjust the fee to cover increased costs incurred by the CUPAs in administering the proposed regulations. The local CUPAs, however, have the ability to increase fees to cover their costs of implementation.

The proposed regulations and their effect of reducing refinery incidents would confer benefits on local residents and communities in the form of cost avoidance associated with incidents, such as a reduction in property values and a reduction in tax revenue to local governments.

Determining the cost to the agency and affected business enterprises and individuals of enforcement and compliance.

DIR Cal/OSHA PSM Unit will enforce the proposed PSM regulation and has contemplated the associated cost of enforcement. The California Legislature approved a budget that added new inspector positions to this unit, which are user funded through Cal/OSHA's fee authority.

The local CUPAs will enforce the proposed CalARP regulation and CalOES has estimated the cost of implementation and enforcement.

The cost of compliance for industry, as detailed previously, is estimated at \$58 million per year. This estimate was arrived at using refinery-provided data, and a range reflecting the 10th and 90th percentiles produced the likely lower (\$20 million) and upper (\$183 million) bounds for annual compliance cost. Assuming that these costs will be passed on to consumers, the cost of compliance is estimated at \$2 per year per Californian adult.

Making the estimation described in Government Code Section 11342.548.

In broad terms, the cost of major incidents at refineries is widely known as a result of the 2012 Chevron and 2015 ExxonMobil incidents. Because of these immense costs, the ability to avoid such incidents would have immense benefits, well above the \$50 million threshold for conducting an SRIA.

Comparing the proposed regulatory alternatives with an established baseline so that agencies can make analytical decisions regarding the adoption, amendment, or repeal of regulations necessary to determine that the proposed action is the most effective, or equally effective and less burdensome, alternative in carrying out the purpose for which the action is proposed, or the most cost-effective alternative to the economy and to affected private persons that would be equally effective in implementing the statutory policy or other provision of law.

Although data limitations precluded estimation of an established baseline, a breakeven analysis was conducted to compare the costs and benefits. The estimated breakeven point for effectiveness was 7.3%. This indicates that if the regulations reduced the risk of a costly major incident by 7.3% (noting the expected annual loss of \$800 million to the California economy due to a costly major refinery incident), the proposed regulations would be cost effective.

Reasonable Alternatives to the Proposed Regulations and Reasons for Rejecting Those Alternatives

Alternative 1: Maintain status quo

One alternative considered was continued enforcement of petroleum refineries under the existing PSM and CalARP regulations without revising the requirements. In the past four years, there have been two major incidents (Chevron in 2012 and ExxonMobil in 2015). Per the Governor’s Task Force Report, existing law, regulation, and level of staffing were unable to forestall the Chevron incident and it was determined that more needed to be done to prevent future incidents of similar or worse consequences. Since 2012, Cal/OSHA has increased enforcement staffing to 10 safety inspectors dedicated to refineries. The additional level of safety achieved through the increased enforcement efforts will be maintained under the current PSM requirements. The costs associated with the continued enforcement or status quo under the existing regulation reflect the estimated number of incidents that may occur in the absence of more stringent requirements and tools mandated under the proposed new PSM and CalARP regulations. RAND estimated the costs of a costly major incident for a California refinery. At least three refinery incidents of this magnitude have occurred in California since 1999. The average cost of such an incident to the refiner that suffers the incident is at least \$220 million. The expected annual loss to the California economy associated with these incidents is \$800 million. Based on the foregoing, maintaining the regulatory status quo is insufficient in addressing risks and preventing future incidents.

Alternative 2: Safety Case Model

California’s existing model of work safety regulation in process safety management emphasizes investigating serious accidents that have previously occurred. As examined by the RAND Center for Health and Safety in the Workplace, over the last 25 years, a perspective has developed that argues that the models currently used—nationwide and in California—are inadequate to ensure safety at very complex facilities, including those characterized by risks that have low frequency but very high disaster potential. This perspective emerged first in Europe, triggered by disasters in the North Sea and Seveso,

Italy (RAND 2013). The United Kingdom and Norway developed a “safety case” approach to regulating off-shore oil platforms in the 1990s, an approach that later expanded to other high-hazard process industries.

The “safety case” model involves considerably more resources in terms of time and agency inspectors. The Hazardous Facilities Unit, which oversees the United Kingdom with safety cases, typically conducts several audits each year at refineries to assess their safety case activities. The safety case model requires facilities to explain what they will do in order to try to ensure their safety. The regulatory authority is charged with determining whether a facilities’ explanation or effort is acceptable or effective. Most regulatory scrutiny goes to auditing the facility to determine whether it has been carrying out the activities called for in the safety case document. Although some contend that the safety case process leads to initial gains in hazard recognition and abatement, it must remain “a living document” in order to fulfill its objectives.

A concern with the safety case model is that describing and documenting how a refinery will manage risks is not equivalent with actually managing risks. Further, augmenting oversight from the existing regulations to a level prescribed by the “safety case” model would be largely infeasible given the related requisite resource demands for regulatory authorities. This approach is estimated to require a fourteen fold increase in staff for Cal/OSHA – from 10 inspectors statewide to 10 inspectors for each of California’s 14 refineries. Additional costs for refineries would also be anticipated, given the significant changes this model would necessitate in California. For these reasons, the “safety case” model is not considered a reasonable alternative to the proposal.

Summary of the statewide costs and benefits for this regulation and each alternative considered:

Scenario	Benefit	Cost
Proposed Regulations	\$800 million	\$58 million
Maintain status quo	\$0	\$800 million
Safety Case approach	\$800 million	\$122 million

For the proposed regulations, the quantifiable benefits are expressed in terms of costs avoided due to safety improvements that reduce the number of costly major refinery incidents. As discussed above under Alternative 1, the proposed regulations are expected to prevent costly major refinery incidents, with \$800 million in costs avoided. As detailed above, the costs associated with compliance with the proposed regulations are estimated at \$58 million. This is a net benefit to the state.

Maintaining the status quo generates \$0 additional benefit to the state. The opportunity cost of doing nothing to strengthen the existing standards is \$800 million in expected annual loss to the California economy.

The Safety Case approach is used by other countries to reduce risks in the petroleum industry. While the same level of benefit (\$800 million) could be achieved through this approach for the same reasons of cost avoidance listed above, the costs for DIR to effectively enforce this approach are estimated to cost \$122 million. This does not contemplate the costs of compliance incurred by industry.