Final Draft Report

Facility-Based Assessment Case Studies

Proposed Rule 1137
Proposed Amended Rule 1421

Disclaimer

The following information was developed as part of a test case to develop a methodology for conducting facility-based assessments. The SCAQMD staff is releasing this draft report to stakeholders and the AQMD Advisory Group for review and comment. With input from interested parties, AQMD staff will further develop and refine the facility-based analysis approach for future rule development projects.

Final Draft Report

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Facility-Based Assessment Case Studies

Proposed Rule 1137
Proposed Amended Rule 1421

Prepared for

South Coast Air Quality Management District
21865 E. Copley Drive
Diamond Bar, California 91765-4182

Prepared by

BBC Research & Consulting
3773 Cherry Creek N. Drive, Suite 850
Denver, Colorado 80209-3827
303.321.2547 fax 303.399.0448
www.bbcresearch.com
bbc@bbcresearch.com

BBC Research & Consulting

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EXECUTIVE SUMMARY

Executive Summary

In late 2000, South Coast Air Quality Management District (AQMD or the District) retained BBC Research & Consulting (BBC) to assist the District in enhancing its capabilities in evaluating the socioeconomic impacts of forthcoming rules and regulations. In particular, BBC was asked to help develop approaches to perform facility-based assessments (FBAs) and post rule assessments (PRAs). The first phase of BBC's work for AQMD included a literature review, interviews with other leading regulatory agencies and interviews with stakeholders previously regulated by AQMD. The first phase concluded during the summer of 2001 with several preliminary recommendations.

In the second phase of this assignment, BBC is developing specific guidelines and methodology for performing FBAs and PRAs. This phase includes case studies designed to apply proposed approaches for FBAs to actual AQMD rulemaking proposals under active consideration by the District. The primary purpose of these case studies is to test the feasibility of the proposed methods and evaluate which data sources may be most suitable for use by the District. AQMD selected two rules as case studies for this effort: PAR 1421, affecting local dry cleaning operations, and PR 1137, affecting a variety of firms in the wood products and furniture and fixtures industries.

Facility-Based Assessments Case Studies: Proposed Rule 1137 and Proposed Amended Rule 1421 is one of several documents that BBC will produce for AQMD, along with reports on guidelines and methodology for FBA and for PRA and on criteria for application and required resources to conduct such assessments.

Lessons Learned from the Case Studies

The case studies presented here have given BBC and AQMD staff much insight into how to solve different problems that present themselves with this type of analysis. Some key lessons learned include the following.

- ***Data collection approaches—***The availability of data to conduct FBAs will vary to some extent depending upon the nature of the proposed regulation and, perhaps to an even greater extent, depending on the industries that may be affected by the proposed rule.

- ***Stakeholder input***—Stakeholder input should be considered an important part of conducting an FBA. Stakeholders, or the business community that will be affected by a proposed rule, will have the best information possible about the current state of the industry and may be able to provide specific financial information regarding typical firms (as in the PAR 1421 case study).

- ***Other issues***—Several other insights are important in designing guidelines for future AQMD FBAs. In particular: AQMD rulemaking is a dynamic process, there are a variety of uncertainties in the available information, and interpretation of the significance of the results of FBAs will tend to be easiest at the extremes.

Executive Summary

Overall, data availability drives what FBAs can tell us about the impacts of an upcoming regulation. Under ideal circumstances, complete information on every firm subject to the regulation would allow AQMD to assess the full distribution of potential impacts across the industry. The practical reality is that AQMD will most often likely have to rely on data describing representative (or typical) firms and base the assessment on this information. As depicted in the case studies in this report, such data still allows an evaluation of affordability for the representative firms, assessment of differences by firm size and industry segment and an overall evaluation of effects on competitiveness and other issues.

Methodology

BBC has defined a four-step process for conducting FBAs on proposed AQMD rules. The four steps include development of: 1) industry profile(s), 2) firm profile(s), 3) regulatory impact model, and 4) impact assessment. Key data sources include published information on the regulated industries, secondary information relating to firm-level financial conditions (largely at the national level), stakeholder input and AQMD rule definitions and cost estimates.

Key Findings of the FBA for PR 1137

PR 1137 would directly affect the LA Basin lumber and wood products industry (SIC 24) and furniture and fixtures industry (SIC 25). The following are some of the key findings produced by the case study FBA.

- Wood product producers operate in a national or international marketplace. This implies that firms subject to PR 1137 would have a difficult time passing the additional costs imposed by the rule to customers. Wood product firms are heavily influenced by the health of the U.S. housing market and by general economic conditions.

- Secondary source data on minority ownership of firms in this industry is either unreliable or not specific to the LA Basin. Trade association representatives report that as much as 30 to 40 percent of firms in the industry are minority owned and that the majority of employees are from minority groups.

- Based upon national data, the average firm potentially affected by PR 1137 has annual revenues of about $4 million and 30 employees. Total profits, before taxes, are estimated at $140,000. The smallest firms potentially affected by PR 1137 have average annual revenues of over $1.4 million and 14 employees. Smaller firms' average profits, before taxes, are estimated at $52,000. The largest firms potentially affected by PR 1137 (50-99 employees) have average revenues of almost $8 million per year and average profits, before taxes, of about $275,000 per year.

Executive Summary

- The limited available local data indicate that LA Basin firms are slightly larger than the national average and have a slightly lower payroll. Certain cost categories—including rent, electricity and workers compensation—may be substantially higher in the LA Basin than the national average.

- AQMD staff anticipate that one-third of firms in the affected industries and size ranges will incur no new capital costs and approximately $2,700 per year in new operational costs (for waste disposal). The remaining two-thirds of affected firms may install relatively low cost equipment, or may need to install the most expensive control equipment, on a case-by-case basis.

- The impact on cash flow for firms of all sizes ranges from less than 1 percent to more than 12 percent, as shown in Exhibit ES-1 on the following page. For firms requiring the highest cost compliance approach, impacts range from about a $4,000 (5 percent) reduction in annual cash flow for small firms, to about a $55,000 (12 percent) annual reduction in cash flow for the largest firms. Firms in the wood pallet, other wood products and wood furniture industry segments may have relatively tight cash flow situations prior to the imposition of any new rule. In the worst-case scenario, firms in these industries could see an impact on cash flow of anywhere from 1 to 22 percent.

- Projected impacts on profitability range from about a 5 percent to 8 percent reduction for the smallest affected firms, to between 1 percent and 20 percent for the largest potentially affected firms. Once again, firms in the wood pallet, other wood products and wood furniture industries may be more heavily impacted, depending on the type of technology they adopt. The absolute worst-case scenario would be a large wood furniture firm having to adopt the most expensive control technology. Such a firm could see a reduction in profits of up to 52 percent.

Exhibit ES-1.
Estimated Annual Costs for PR 1137 Relative to Pre-Rule Firm Financial Performance

	Size of Establishment					
	Small		Average		Large	
Pre-PR 1137 Financial Characteristics						
Average Annual Revenue	$1,435,000		$3,985,000		$7,859,000	
Average Annual Profit Before Taxes	$52,000		$140,000		$277,000	
Impact of PR 1137 Costs	***Minimum***	***Maximum***	***Minimum***	***Maximum***	***Minimum***	***Maximum***
Estimated Annual Costs	$2,700	$3,914	$2,700	$12,230	$2,700	$54,535
Costs as Percentage of Revenue	0.2%	0.3%	0.1%	0.3%	0.0%	0.7%
Costs as Percentage of Profits Before Taxes	5.2%	7.5%	1.9%	8.7%	1.0%	19.7%

Source: AQMD cost estimates and BBC Research & Consulting financial estimates.

- The wood products and furniture and fixtures industries suffered a substantial downturn in the late 1980s and early 1990s that is believed to have been, at least in part, related to AQMD Rule 1136 requirements for new coatings. The local industry has apparently made a strong recovery in recent years, and the magnitude of costs (and corresponding potential price increases) resulting from PR 1137 seem unlikely to have a major impact on regional competitiveness. Larger firms having to adopt the most expensive compliance technology, however, could be in the most challenging competitive position.

Key Findings of the FBA for PAR 1421

PAR 1421 is intended to reduce emissions of perchloroethylene (perc) and would directly affect dry cleaning operations in the LA Basin. Two scenarios were analyzed for this case study—a non-perc scenario and a perc scenario. Some key findings from this assessment include the following.

- LA Basin dry cleaners compete strongly with nearby competitors. The typical establishment serves a market area within two miles of its location or less. Local dry cleaners report that new firms are easily established, driving down industry profit margins.

- Dry cleaning operations within the LA Basin are almost all very small operations. The average establishment (including a few large operations) has five employees, while the most typical size is about two employees.

- Again, secondary data on minority ownership and employment for LA Basin dry cleaning operations is not reliable. Based upon membership rolls for minority dry cleaning association, it is believed the majority of local dry cleaners are minority owned.

- Typical firm financial and operational profiles were developed in a workshop with local dry cleaning owners and trade association representatives. The data provided are reasonably consistent with annual financial information on dry cleaning operations at the national level. The most common dry cleaning operation is described as having a single dry cleaning machine, two employees, annual revenues of $120,000 to $180,000 and profits before taxes of about $6,000 to $18,000. The next larger size of operation still has a single machine, but has seven employees, annual revenues of $360,000 to $540,000 and profits of $18,000 to $54,000. The largest operations have two cleaning machines, 25 employees, revenues of nearly $1 million per year and profits of almost $50,000 per year.

- There is a relatively wide range surrounding the estimates of the costs that could be imposed on dry cleaners under the non-perc scenario. Conversion to wet cleaning appears more affordable than conversion to solvent cleaning for the smallest operations. For wet cleaning, small firms have estimated annual costs ranging from a cost saving at the low end to an estimate of increased costs of 37 percent of current profits before taxes at the high end. Market and industry acceptance of wide scale wet cleaning is unknown, however. For the medium and large size firms, conversion to solvent cleaning is competitive with wet cleaning. Exhibit ES-2 on the following page depicts annualized costs at the firm level and costs as a percentage of revenues and profits for each of the representative dry cleaning firms.

Exhibit ES-2.
Range of Estimated Annual Costs for PAR 1421 Non-perc Scenario Relative to Pre-rule Firm Financial Performance

	Size of Establishment					
	Smallest (2 employees)		***Medium (7 employees)***		***Large (25 employees)***	
Pre-Rule 1421 Financial Characteristics						
Average Annual Revenue	$150,000		$450,000		$960,000	
Average Annual Profit Before Taxes	$11,250		$33,750		$48,000	
Impact of Proposed Rule 1421 Costs – Annual Costs Above Perc Baseline						
Wet Cleaning	***Low***	***High***	***Low***	***High***	***Low***	***High***
Estimated Annual Costs	($4,706)	$4,398	$4,209	$12,105	$10,725	$25,758
Costs as Percentage of Revenue	-3.1%	2.9%	0.9%	2.7%	1.1%	2.7%
Costs as Percentage of Profits Before Taxes	-41.8%	39.1%	12.5%	35.9%	22.3%	53.7%
Solvent	***Low***	***High***	***Low***	***High***	***Low***	***High***
Estimated Annual Costs	$3,212	$16,350	$2,528	$16,501	$4,857	$33,391
Costs as Percentage of Revenue	2.1%	10.9%	0.6%	3.7%	0.5%	3.5%
Costs as Percentage of Profits Before Taxes	28.5%	145.3%	7.5%	48.9%	10.1%	69.6%

Source: AQMD cost estimates and BBC Research & Consulting.

- The perc scenario principally affects new firms and large firms with more than one cleaning machine. Essentially, new firms would face the same costs outlined previously for the non-perc scenario, while existing small firms could replace their current equipment when needed with another perc machine. If AQMD sets a mandatory replacement date, some small firms that would otherwise nurse their existing equipment along beyond its typical life might be affected financially. Large operations, with more than one cleaning machine, would have to eventually replace their second machine (when needed) with non-perc technology. These firms face one-half the annualized costs under this scenario that they would face under the non-perc scenario. Exhibit ES-3 on the following page summarizes annual costs under the perc scenario for various types of firms in the context of their estimated annual revenues and profits.

Exhibit ES-3.
Range of Estimated Annual Costs for PAR 1421 Perc Scenario Relative to Pre-rule Firm Financial Performance

	Size of Establishment					
	Smallest (2 employees)		***Medium (7 employees)***		***Large (25 employees)***	
Pre-Rule 1421 Financial Characteristics						
Average Annual Revenue	$150,000		$450,000		$960,000	
Average Annual Profit Before Taxes	$11,250		$33,750		$48,000	
Impact of Proposed Rule 1421 Costs – Annual Costs Above Perc Baseline						
New Firms	***Low***	***High***	***Low***	***High***	***Low***	***High***
Estimated Annual Costs	($4,706)	$16,350	$2,528	$16,501	$4,857	$33,391
Costs as Percentage of Revenue	-3.1%	10.9%	0.6%	3.7%	0.5%	3.5%
Costs as Percentage of Profits Before Taxes	-41.8%	145.3%	7.5%	48.9%	10.1%	69.6%
Existing Firms	***Low***	***High***	***Low***	***High***	***Low***	***High***
Estimated Annual Costs	$0	$0	$0	$0	$2,428	$16,695
Costs as Percentage of Revenue	0.0%	0.0%	0.0%	0.0%	0.3%	1.7%
Costs as Percentage of Profits Before Taxes	0.0%	0.0%	0.0%	0.0%	5.1%	34.8%

Source: AQMD cost estimates and BBC Research & Consulting.

- While regional competitiveness is not an issue for PAR 1421 (since the firms compete on a local basis), differential impacts among dry cleaning firms in the LA Basin could raise intra-industry competitiveness issues. In particular, firms facing early adoption of non-perc technology under the non-perc scenario (because their existing equipment wears out) may be at a competitive disadvantage relative to other firms. New firms may be relatively disadvantaged under the perc scenario, perhaps raising a new barrier to entry, at least to some degree. In the long-run, dry cleaning prices in the LA Basin appear likely to rise by three to five percent under the non-perc scenario as costs are eventually passed along to consumers.

SECTION I.
Introduction and Purpose of this Report

Introduction and Purpose of this Report

In late 2000, South Coast Air Quality Management District (AQMD, or the District) retained BBC Research & Consulting (BBC) to assist the District in enhancing its capabilities in evaluating the socioeconomic impacts of forthcoming rules and regulations. In particular, BBC was asked to assist in developing approaches to perform facility-based assessments (FBAs) and post rule assessments.

The first phase of BBC's work for AQMD included a literature review, interviews with other leading regulatory agencies and interviews with stakeholders previously regulated by AQMD. The first phase concluded during the summer of 2001 with several preliminary recommendations. Recommendations regarding facility based assessment included:

- Use FBA to increase stakeholder participation in the regulatory process;
- Develop industry and representative firm profiles from stakeholder input and secondary data;
  - Recognize that required data may vary somewhat by rule and industry and that available data will have limitations; and
- Use industry and firm profiles to assess affordability, competitiveness and impacts on small and disadvantaged businesses.

In the second phase of this assignment, BBC is developing specific guidelines and methodology for performing facility based assessments and post rule assessments. This phase includes case studies, designed to apply proposed approaches for facility-based assessment to AQMD rulemaking proposals under active consideration by the District. The primary purpose of these case studies is to test the feasibility of the proposed methods and evaluate which data sources may be most suitable for use by the District. AQMD selected two rules as case studies for this effort: PAR 1421, affecting local dry cleaning operations, and PR 1137, affecting a variety of firms in the wood products and furniture and fixtures industries.

Overview of Lessons Learned From the Case Studies

Prior to delving into the details of the proposed structure for FBAs and the results from the two case studies, a number of important findings from the case study process should be noted. The next few pages focus on data related issues and how they affect the approach to and scope of information available from facility based assessments.

Data collection approaches. The availability of data to conduct FBAs will vary to some extent depending upon the nature of the proposed regulation and, perhaps to an even greater extent, depending on the industries that may be affected by the proposed rule. Exhibit I-1 below depicts some of the key aspects of the industries that would be regulated by PAR 1421 and PR 1137, noting their similarities and differences and the affect of those characteristics on the availability of secondary data for the assessment. Secondary data includes previously developed written or electronic data from a variety of potential sources. More detail regarding the specific sources of information evaluated for these case studies is provided in the separate ***Guidelines and Methodology for Facility Based Assessment*** report. More information on primary data collection (information directly obtained from the regulated firms and industries) is discussed on the following page.

Exhibit I-1.
Similarities and Differences Between PAR 1421 and PR 1137

Case Study	*Industry Type*	*Approach*
PAR 1421	▪ Small, privately held firms ▪ Single, homogenous industry ▪ Non-manufacturing	▪ No secondary data on individual firms ▪ Facilitates workgroup/focus group firm profiling ▪ Limited secondary data on firm-level finances
PR 1137	▪ Small, privately held firms ▪ Variety of industry segments ▪ Manufacturing	▪ No secondary data on individual firms ▪ Workgroup/focus group firm profiling difficult ▪ Greater secondary data on firm-level finances at national level

Lessons Learned—Stakeholder Participation

Stakeholder input should be considered an important part of conducting an FBA. Stakeholders, or the business community that will be affected by a proposed rule, will have the best information possible about the current state of the industry. Involving the business community in FBA will also give AQMD another opportunity to interact with the regulated community in a cooperative manner.

The types of stakeholder interaction recommended in BBC's Phase I report included:

- Focus groups with all stages of the sector to be regulated (from input manufacturers to retailers) to refine cost estimates, assess feasibility and develop a clear understanding of how the sector functions and key issues; and
- Surveys or case studies to develop representative firm profiles and assess affordability and competitiveness issues.

PR 1137. A public hearing was held and public comment has been solicited, but due to the timing of the selection of this rule as a case study, BBC did not participate in working group sessions for PR 1137. Focus groups with the affected industry were also conducted prior to the decision that BBC would use PR 1137 as a test case. Thus, opportunities for interaction between BBC and stakeholders on PR 1137 have been limited.

A separate document containing the initial draft of the industry profile and representative firm profiles that BBC developed based on secondary data for industries impacted by PR 1137 was distributed to the trade associations and a few other individuals in the wood industries. BBC received a number of comments on these drafts, which were incorporated in this document.

PAR 1421. With regards to PAR 1421, BBC facilitated input from the PAR 1421 working group, comprised of dry cleaning business owners and trade association representatives. At that meeting we discussed:

- Industry background and current trends; and
- Representative firm financial and operational characteristics.

A summary of the findings from this session was sent to workshop participants for comment.

Lessons Learned—Other Issues and Overall Limitations

The case study process identified a number of other insights that are important in designing guidelines and methodology for ongoing use by the District in performing FBAs.

- AQMD rulemaking is a dynamic process – proposed rules are subject to continual modification throughout the rulemaking process and the assessment mechanism must be sufficiently flexible to accommodate changes on relatively short notice.

- There are a variety of uncertainties in the information available for assessment—apart from the uncertainties inherent in key pieces of information for the facility based assessment (such as firm level financial performance measures)—the regulatory cost estimates, state of current technology among the regulated industry and common potential for multiple compliance approaches are all subject to uncertainty as well. The end result of an FBA will not be a perfect measure of impacts, but rather should provide the best information possible to District decision makers given reasonable estimates and assumptions.

- Assessment will tend to be easiest at the extremes—an FBA is a useful tool for placing regulatory costs and other impacts in the context of firm level measures and industry trends. Some of the key information that can be developed from this process includes annualized compliance costs as a percentage of firm cash flows or profits. At the low and high extremes, such measures may provide fairly obvious answers concerning affordability and other issues appropriate for an FBA, while reasonable people may disagree on the significance of intermediate values.

Overall limitations. Data availability drives what FBA can tell us about the impacts of an upcoming regulation. Under ideal circumstances, complete information on every firm subject to the regulation would allow AQMD to assess the full distribution of potential impacts across the industry. The practical reality is that AQMD will most often likely have to rely on data describing representative (or typical) firms and base the assessment on this information. As depicted in the case studies in this report, such data still allows an evaluation of affordability for the representative firms, assessment of differences by firm size and industry segment and an overall evaluation of effects on competitiveness and other issues.

By definition, FBA has a very narrow focus. Intended to describe potential impacts in the short-run, from the standpoint of the owners/operators of regulated facilities, FBA does not consider:

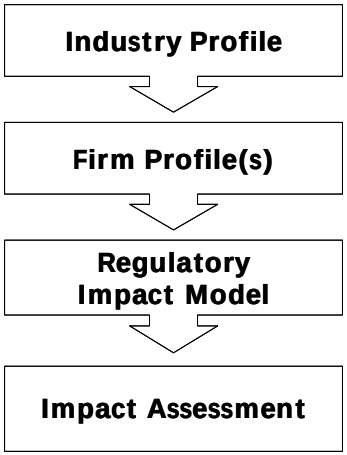
- Benefits of proposed rules, such as improvements in air quality or increased demand for control equipment manufacturers.

- Long-run adjustments that may ultimately reduce the impacts of proposed rules.

Structure of FBAs

The proposed structure for FBAs used in this case study report was developed from the literature review, interviews with other leading regulatory agencies and interviews with the regulated community conducted in the first phase of this assignment. In general terms, completing an FBA will involve the four steps highlighted in Exhibit I-2.

Exhibit I-2.
Four Steps in Completing an FBA



Industry Profile

The purpose of an industry profile is to provide the AQMD decision makers with information about how the impacted industry/industries work, the structure of the industry/industries and trends that relate to the ability of regulated firms to comply with new regulations.

Typical elements of the industry profile may include the following:

Describing the regulated industry/industries

- What specific industries will be impacted by the rule?
- What do businesses in these industries do and what is the relevant process that will be regulated?

Industry composition

- How many firms are in the industry and how do they breakdown by size?
- What do we know about minority ownership of potentially impacted firms?

Markets and competition

- Who are the customers of the industry? Does the industry sell directly to end-users? Are customers in the LA Basin or in the national or international marketplace?
- Does the industry compete with firms located outside of the LA Basin? Is there competition from alternative products?

Factors and trends impacting the industry

- What are the economic trends or specific current and future issues impacting the industry? How does the industry fare in different economic climates?
- Are there existing AQMD regulations that affect this industry?

Firm Profile

A firm profile is basically a snapshot of operational and financial characteristics for an individual firm. Firm profile(s):

- Describe the operational and financial characteristics of firms such as employment, payroll, materials costs and profit margins in industries potentially affected by the rule;
- Provide a baseline against which the costs or other effects of the proposed rule can be measured; and
- Assist the AQMD decision makers in understanding the nature and economics of firms in the regulated industry.

BBC envisions the preparation of detailed firm profiles for firms of different sizes (such as average sized firms, the smallest firms and the largest firms subject to the regulation) and/or different segments of the regulated industry. These profiles may be developed from input from local firm and industry experts and/or available secondary data. When these profiles rely heavily on the use of national data, a description of the ways in which firms in the LA Basin may deviate from national averages should be included.

Availability of local data. The types of data available for creating firm profiles will vary significantly depending on the industry being regulated. Data specific to firms in the LA Basin would be preferable, but often will be unavailable from secondary sources. Stakeholder input is one way of addressing a lack of firm-level information specific to the LA area. The PAR 1421 and PR 1137 case studies illustrate different approaches. The former relies heavily on data provided by stakeholders, the latter on national data, supplemented by information specific to the LA Basin wherever possible.

Regulatory Impact Model

The third component of an FBA is the regulatory impact model. The regulatory impact model combines:

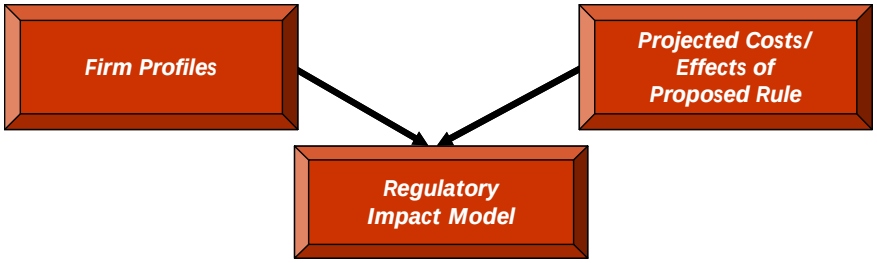
- Firm level financial and operational information (from the firm profiles); with
- Projected firm level capital costs, financing assumptions, annual operations and maintenance (O&M) and other costs potentially imposed by the proposed rule. In both of the test cases presented here, PR 1137 and PAR 1421, AQMD staff developed all cost inputs. BBC converted these inputs into costs at the firm level.

Depending on the nature of the proposed compliance requirements (and availability of data), the regulatory impact model can provide "before the rule and after the rule" comparisons of firm level income statement, balance sheet and/or multi-year financial pro-forma information.

These "before and after" comparisons will provide the AQMD decision makers with information about the impact of a proposed rule and will also feed into the fourth step in FBA—impact assessment.

Exhibit I-3 portrays the development of the regulatory impact model.

Exhibit I-3.
Components of the Regulatory Impact Model



Impact Assessment

The final analytical component of an FBA is the impact assessment. The impact assessment combines information from the:

- Regulatory impact model (which is based on the firm profiles);
- The industry profile; and
- Other qualitative concerns expressed by the business community during the process of gathering stakeholder input.

When the costs of the proposed rule fall on one end or the other of the continuum (either being relatively modest or relatively large compared to the scale of overall firm operations), judgments about the impact of a rule on affordability or competitiveness may be relatively easy for AQMD decision makers to reach. When the costs fall in the middle, it will be more difficult. The following are among the potential pieces of information that may be included in reports on FBAs to allow AQMD decision makers to make informed judgments.

Affordability

- Impact on cash flow
  - absolute and percentage change in cash flow
- Impact on profitability
  - percentage change in profits
  - change in return on equity
- Ability to finance
  - coverage ratios, e.g., cash flow/annual debt service requirements

Impact Assessment (cont.)

Competitiveness

- Nature of the industry (local service versus inter-regional competition)
- LA Basin versus national trends
- Costs of proposed regulation as percentage of sales revenue (potential price increase)
- Magnitude of costs for new firms as percentage of total startup costs
- Variation in impacts among firms within the LA Basin

Small/Disadvantaged Businesses

- Extent of small/disadvantaged businesses within the regulated industry
- Impacts on small/disadvantaged businesses
- Differential impacts or magnitude of impacts relative to other firms in the regulated industry

Cumulative Impacts

- Combined effects of proposed rule with prior AQMD regulations, if any, on the affected industry (further consideration of affordability, competitiveness, small/disadvantaged business issues)

SECTION II.
Case Study #1—PR 1137

SECTION IIA.
Industry Profile— PR 1137

Describing PR 1137

The purpose of PR 1137 is to reduce the release of fine particulate matter (e.g., sawdust) into the atmosphere from woodworking operations. The following summarizes the key requirements of the proposed rule for the purposes of FBA. The rule making process was on-going at the time this report was developed and the ultimate staff proposal to the Governing Board may differ from the scenario analyzed herein.

- The rule applies only to facilities that currently use a system (called a pneumatic conveyance system) that collects particulate matter-laden air and directs it to the atmosphere.
- Existing firms would need to ensure there are no visible emissions from their control system. If there are visible emissions, the control system would need to be modified or upgraded.
- New or expanded firms would be required to use filters, cyclones or a baghouse system (a type of control device) to ensure no visible emissions.
- Existing, expanded and new firms would be required to use an enclosure or shroud between the control device and waste storage bins.
- Existing, expanded and new firms would be required to use best management practices to reduce emissions during waste disposal (e.g., disposal bags within waste storage bins and covers over bins at all times).

Potentially Impacted Firms

AQMD staff have conducted surveys, site visits and other research to determine the types of firms likely to be impacted by PR 1137.

- The rule is most likely to impact firms within the lumber and wood products industry (SIC code 24 or NAICS Code 321) and the furniture and fixtures industry (SIC code 25 or NAICS Code 337). Examples of impacted industries include the following.
  - Sawmills and planing mills
  - Millwork (doors, window trim)
  - Wood kitchen cabinets
  - Wood pallets and skids
  - Mobile home manufacturers
  - Wood furniture
  - Miscellaneous wood products such as ladders, bowls and corks
  - Mattresses and box springs
  - Wood boxes, including shipping and packing cases
  - Drapery hardware, window blinds and shades
- The rule likely will only apply to larger firms (with more than ten employees). This is because small firms typically do not have a pneumatic conveyance system. Large firms employing over 100 people (which represent about 15 percent of the total number of potentially impacted firms) are not expected to incur any additional control costs or disposal costs.
- According to AQMD staff estimates, one-third of firms with between 15 and 100 employees will experience no new control costs, though all firms are expected to experience an increase in disposal costs.

Industry Composition

Approximately two-thirds of LA Basin firms in the wood products industry (NAICS 321) and the furniture industry (NAICS 337) employ less than 20 people. The size composition of the wood products industry is about the same on a national level, but the furniture industry nationally has a larger percentage of firms employing less than 20 people.

Exhibit IIA-1.
Proportion of LA Basin Woodworking Firms by Size, 1999

Source:
U.S. Census Bureau, County Business Patterns.

	Wood Products					Furniture & Related Products				
County	***1-9***	***10-19***	***20-249***	***250 +***	***Total***	***1-9***	***10-19***	***20-249***	***250 +***	***Total***
Los Angeles	118	60	88	2	268	489	156	317	17	979
Orange	48	24	27	0	99	126	30	82	8	246
Riverside	27	2	14	2	45	72	15	29	3	119
San Bernardino	40	21	42	3	106	59	19	59	9	146
LA Basin Total	233	116	171	7	527	746	220	487	37	1,490
% of LA Basin	***44%***	***22%***	***32%***	***1%***	***100%***	***50%***	***15%***	***33%***	***2%***	***100%***
United States	8,340	3,153	5,638	342	17,473	12,429	2,941	4,428	468	20,266
% of US	***48%***	***18%***	***32%***	***2%***	***100%***	***61%***	***15%***	***22%***	***2%***	***100%***

Minority ownership and employment. Sources of information on minority business ownership include Dunn and Bradstreet (D&B), the Economic Census and local trade associations. D&B minority ownership data reflects a small sample of firms in the LA Basin that is not believed to be representative. Economic Census data on minority ownership reflects the State of California as a whole, where 13 percent of wood products firms (SIC 24) and 21 percent of furniture and fixtures (SIC 25) were minority owned in 1997.

LA Basin trade association representatives report that a substantial portion of local firms in these industries are minority owned, and that most employees come from minority groups.

Wood Product Markets

Some wood product firms make products used by other firms in the same industry. For example, sawmills produce lumber to be used in millwork plants or in furniture manufacturing facilities. End users of finished products include businesses, households and individual consumers.

- Sawmills or planing mills produce lumber which is sold to wood product manufacturers. Lumber is also a primary input in the construction industry.
- Cabinets and millwork are used in new home construction and in home repair and remodeling. The "big box" retail hardware store is becoming an important source of home building and renovation products.
- Many wood products are used by businesses. Warehousing and shipping firms purchase wood pallets or shipping containers. Retail businesses need wood store fixtures and shelving products.
- Furniture, mattress and box springs and other product producers sell their products to retail outlets or directly to customers.

In the broadest sense, wood product producers operate in a national or international marketplace. Lumber and furniture are both exported from the U.S., and these same products are also imported. In recent years, national imports have exceeded exports by a wide margin.

- In a 1998 study of the home furniture industry produced on behalf of AQMD, the authors indicate that finished products are sold both in the local area and in larger markets. Several large manufacturers in the region reported that less than 20 percent of their products were sold in Southern California.
- Lumber (the main product of sawmills and planning mills) is typically sold in a regional market. For example, two-thirds of the softwood lumber produced by sawmills in the West is used in that same region. Some lumber may be sold in a national marketplace or even shipped overseas to Asia or other countries.
- The marketplace for producers of products such as millwork or cabinets often depends on the size of the operation. Small companies may find that most of their customers are local, while larger companies may sell products to customers located throughout the United States.

Competition from Firms Outside of the LA Basin

Wood product firms in the LA Basin face competition from firms located outside the region.

- Just as firms in the LA Basin export products, there are firms in other parts of California, the country and the world that seek to sell unfinished and finished wood products to businesses and consumers in the LA Basin.

- Exhibit IIA-2, below, indicates that the LA Basin has a disproportionately large number of furniture and fixture firms and a disproportionately small number of lumber and wood product firms relative to US averages. Given generally similar firm sizes in the LA Basin and the rest of the US, these data indicate that the Basin may be a net exporter of furniture to other parts of the US and a net importer of other wood products from outside the Basin.

Exhibit IIA-2.
Comparative Geographic Distribution of Woodworking Firms, 1999

Source:
US Census Bureau, County Business Patterns and Census 2000.

	Wood Products	*Furniture*
Number of firms		
LA Basin	527	1,490
United States	17,473	20,266
Relative size of the LA Basin industry	3%	7%
Number of firms per million residents		
LA Basin	34	95
United States	62	72

The finding that woodworking firms face competition from firms outside of the region implies that firms subject to PR 1137 would have a difficult time passing the additional costs to customers. If firms experiencing cost increases due to the proposed rule raise their prices, they could lose market share to firms outside the LA Basin, or to firms within the Basin not faced with higher costs due to the rule. AQMD staff assume that two-thirds of wood products firms with 10 to 99 employees in the LA Basin would be affected and experience additional capital costs due to the proposed rule, the remaining one-third would experience much smaller operational cost increases.

Factors and Trends Impacting the Industry

Wood product firms are heavily influenced by the health of the U.S. housing market and by general economic conditions.

- Lumber, millwork and cabinets are used in constructing new residential and light commercial buildings. The growing market in home remodeling and repair is also becoming an important target for wood product companies.
- There is product competition within the wood products industry. For example, producers of OSB Board (a reconstituted wood product) and plywood often compete for similar customers. Decreased prices for lumber can be a benefit to manufacturers of finished wood products such as furniture.
- According to Standard and Poor's research, lumber markets have been relatively weak for the last five years. Excess supplies have resulted from overproduction by domestic sawmills and imports coming into the United States primarily from Canada.
- Comments provided by industry representatives in the LA Basin indicate that overseas competition is increasing and placing pressure on industry profit margins.

Over the past 30 years, LA Basin firms in SIC Code 24 (Lumber and Wood Products, Except Furniture) and SIC Code 25 (Furniture and Fixtures) have seen steady growth as measured by total wages generated by firms. In the late 1980s and early 1990s, both industries declined substantially in the LA Basin, as indicated by Exhibit IIA-3 and IIA-4 on the following page. Since 1995, however, LA Basin total payrolls in these industries have expanded rapidly, outpacing national growth. LA Basin trade association representatives indicate that recent exports to China may be a factor in their expansion.

Factors and Trends Impacting the Industry (cont.)

Exhibit IIA-3.
Annual Employee Earnings,
LA Basin vs. US
SIC 24: Lumber and Wood Products

Source:

U.S. Bureau of Economic Analysis, Regional Economic Information System 2000.

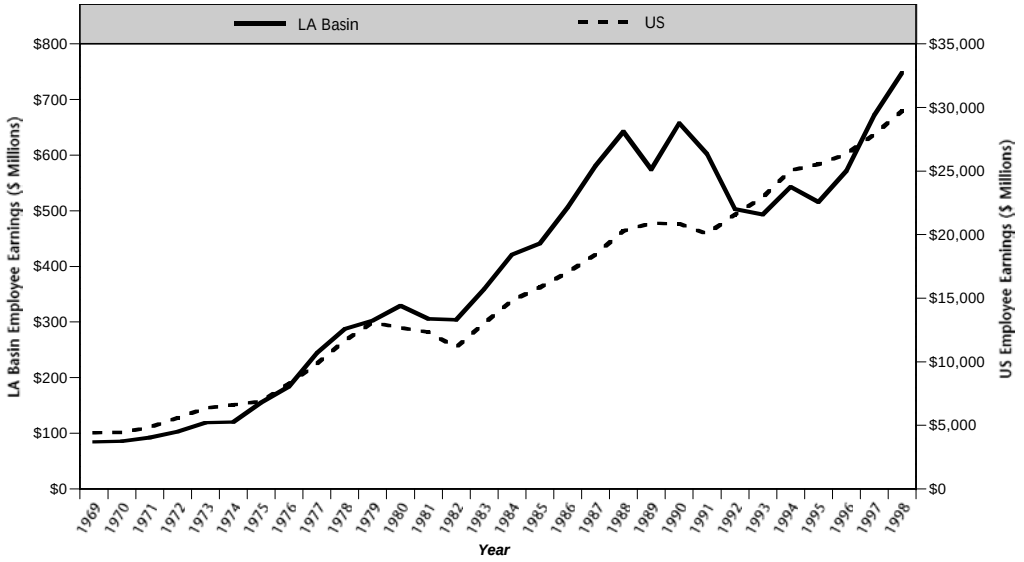
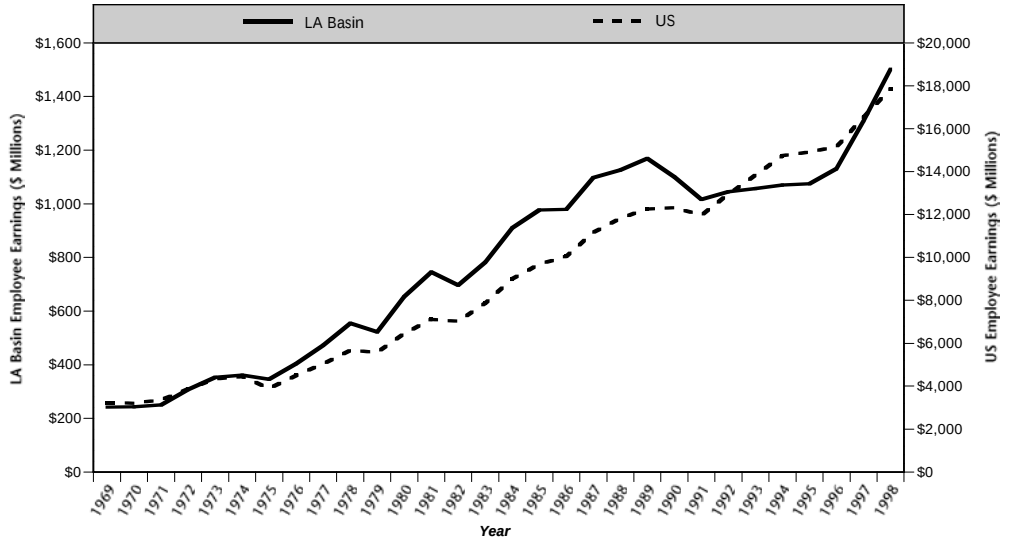


Exhibit IIA-4.
Annual Employee Earnings,
LA Basin vs. US
SIC 25: Furniture and Fixtures

Source:

U.S. Bureau of Economic Analysis, Regional Economic Information System 2000.



Prior AQMD Regulations

Many of the firms that may be impacted by PR 1137 are regulated under other AQMD rules.

- Rule 1136 (initially adopted in 1983) is intended to reduce volatile organic compound emissions for paint coatings and solvents used by wood product manufacturers.
  - With the exception of sawmills and planing mills, almost all of the types of firms potentially impacted by PR 1137 are subject to Rule 1136 (though individual firms may or may not have been affected, depending on their use of coatings and solvents.)
- Rule 1104 (adopted in 1999) regulates the use of coatings, inks and adhesives to wood flat stock used for the inside walls of buildings such as homes, office buildings or mobile homes.
  - This rule applied to only one firm which has an SIC Code of 2491. The facility only had four employees at the time the rule was adopted. If the facility still has the same level of employment, according to AQMD staff assumptions, it would not be affected by PR 1137.

SECTION IIB.
Firm Profiles—PR 1137

How Firm Profiles Were Developed

To develop firm profiles, BBC worked with AQMD staff to identify industries likely to be impacted by PR 1137.

- AQMD identified potentially affected industries and obtained available firm level information from an Info USA database.
- AQMD determined that firms with less than 10 or more than 99 employees would not be impacted by PR 1137.
- BBC selected eight specific industries (4-digit SIC codes). Each industry comprises at least 4 percent or more of all firms potentially affected. Together, the eight industries comprise 70 percent of potentially impacted firms in the LA Basin. Exhibit III-1, below, highlights the eight industries chosen and the percentage of those firms in different employment size categories.

After identifying industries, BBC derived a generalized operational and financial profile of the "average" firm in each of the eight industries based on national data from the 1997 Economic Census and the Risk Management Association (RMA). Firm profiles presented here are based entirely on secondary data. Separate profiles were developed to represent the smallest firms (10-19 employees) and the largest firms (50 to 99 employees) potentially affected by PR 1137.

It is certainly possible that firms in the LA Basin will be different from national average firms. Unfortunately, complete, detailed financial data specific to firms potentially impacted by PR 1137 is simply not available from secondary sources. Possible differences between national figures and firms in the LA Basin are discussed later in this report.

Exhibit IIB-1.
Potentially Regulated Firms by Size

Industry SIC Code*	# Firms	% of Firms by Size							
		10-19	20-49	50-99	100-249	250-499	500-999	1000-4999	10,000+
2421	58	33 %	36 %	21 %	7 %	0 %	3 %	0 %	0 %
2426	24	25	54	17	4	0	0	0	0
2431	83	42	33	15	6	2	0	2	0
2448	37	38	46	14	0	3	0	0	0
2499	77	13	75	13	0	0	0	0	0
2511	28	14	29	25	11	21	0	0	0
2515	44	27	27	21	23	2	0	0	0
2591	23	35	26	17	4	9	4	4	0
Other Industries	157	27	32	17	14	6	2	1	1
Total	***531***	***32 %***	***35 %***	***16 %***	***10 %***	***4 %***	***1 %***	***1 %***	***0 %***

Source: BBC Research & Consulting from InfoTrack data provided by AQMD.

Composite Firm Profiles

The average firm potentially impacted by PR 1137 would have the characteristics portrayed in Exhibit IIB-2, based on national data for the eight industry segments included in this analysis.

Exhibit IIB-2.
Firm Profiles

* Equipment and buildings only.

** Land rental, finance costs, etc.

Source:

Data from 1997 Economic Census of Manufacturers, except profit before taxes from Risk Management Associates and land rental and finance costs estimated as residual.

	Average Firm	*Smallest Affected Firms*	*Largest Affected Firms*
# Employees	30	14	71
Total Revenues	$3,985,000	$1,435,000	$7,859,000
Expenses			
Labor	$886,000	$352,000	$1,912,000
Materials	$2,245,000	$782,000	$4,435,000
Purchased Services	$87,000	$31,000	$165,000
Rent *	$39,000	$15,000	$70,000
Other **	$392,000	$130,000	$632,000
Capital	$121,000	$45,000	$219,000
Depreciation	$75,000	$28,000	$149,000
Total	$3,845,000	$1,383,000	$7,582,000
Profit Before Taxes	$140,000	$52,000	$277,000
Profit Before Taxes, Percent of Sales	3.5%	3.7%	3.5%

Based upon the national data:

- The average firm potentially affected by PR 1137 has annual revenues of about $4 million and 30 employees.
- Total profits, before taxes, are estimated at $140,000.
- The smallest firms potentially affected by PR 1137 have average annual revenues of over $1.4 million and 14 employees.
- Smaller firms average profits before taxes are estimated at $52,000.
- The largest firms potentially affected by PR 1137 (50-99 employees) have average revenues of almost $8 million per year and average profits, before taxes, of about $275,000 per year.

Variations from Composite Firm Profiles

Any individual firm within the LA Basin will differ from the "average firm." Data limitations mean that firm profiles are representative in nature, though suitable for assessing the magnitude of compliance impacts.

Variation by industry. The composite "average firm" profile does not distinguish between different types of businesses within the two primary SIC or NAICS Codes that will be potentially impacted by PR 1137. There are some differences:

- Total average firm revenues range from $1,503,000 for a wood pallet and skid company to $5,448,000 for a mattress, foundation and convertible bed company.

- Total profits before taxes range from $57,000 for the average wood pallet and skid facility to $287,000 for the average drapery hardware, window blind and shade facility.

Variation by year. Revenues, costs and profit margins vary from year to year. RMA data on profit before taxes over several years suggest the data used herein are reasonably representative of typical conditions.

Variations from Composite Firm Profiles (cont.)

Variation of LA Basin from national characteristics. Potentially affected firms in the LA Basin may differ from their national counterparts in several ways.

- The average firm profile presented earlier indicates that nationally the average firm size is 30 employees. LA Basin firms are slightly larger with 31 employees. On the other hand, the national average payroll is approximately $750,000 for an individual firm, but it is only $720,000 for an individual LA Basin firm.

- AQMD staff expect that PR 1137 will not impact firms with fewer than 10 or more than 99 employees. The average firm profile (see above) was developed using national data that includes firms of all sizes—even small and large firms.

- Firms in the LA Basin likely have to comply with stricter air quality regulations than firms in many other locations, given the LA Basin's status as a non-attainment area. Prior AQMD regulations are discussed in the industry profile.

- Comments from representatives of the potentially affected industries in the LA Basin indicate that certain cost categories—including rent, electricity and workers compensation—may be substantially higher in the LA Basin than the national average. Independent, secondary data appear to generally support at least some of these comments. Rental rates for manufacturing space in Los Angeles were reported as the fourth highest among 19 large U.S. metropolitan areas (13 percent higher than the average), while rental rates in Orange County were reported as second highest (over 50 percent above the average). (Cushman & Wakefield, 1999.) In year 2000, California average electricity rates were 20 percent higher than the national average. (U.S. Department of Energy, 2001.)

- It is not known whether higher costs for rent, electricity and workers' compensation are offset by cost savings in other areas, or higher than average revenues for LA Basin firms, or whether these greater costs result in lower than average profitability for local firms.

Firm Profiles by SIC Codes

Exhibits IIB-3 through IIB-5 on the following pages provide firm profiles for selected SIC codes for the three size categories: average, smallest and largest.

These segment-specific estimates may be less reliable than the estimated impacts on the composite firms presented in Exhibit III-2. National data may be less applicable to specific industries, given the small number of firms in each category in the LA Basin.

The eight industries within the broad categories of Lumber and Wood Products (SIC 24) and Furniture and Fixtures (SIC 25) are as follows:

1. SIC 2421 Sawmills and Planing Mills
2. SIC 2426 Hardwood Dimension and Flooring Mills
3. SIC 2431 Millwork
4. SIC 2448 Wood Pallets and Skids
5. SIC 2499 Wood Products, Not Elsewhere Categorized
6. SIC 2511 Wood Household Furniture, Except Upholstered
7. SIC 2515 Mattresses, Foundations and Convertible Beds
8. SIC 2591 Drapery, Window Blinds and Shades

Readers may wish to mark this page, as further discussions of specific industries may not relate SIC codes to the industry description.

Average Firm Profiles for Selected SIC Codes

Exhibit IIB-3.
Average Firm Profiles for Selected SIC Codes

SIC Code	*2421*	*2426*	*2431*	*2448*	*2499*	*2511*	*2515*	*2591*
Total Revenues	$5,372,000	$3,713,000	$5,382,000	$1,503,000	$1,978,00	$2,924,000	$5,488,000	$4,864,000
Expenses								
Direct Labor Costs								
# Employees	27	28	40	17	20	33	33	40
Payroll per Employee	$26,000	$3,000	$26,000	$19,000	$22,000	$21,000	$26,000	$22,000
Benefits per Employee	$7,000	$5,000	$6,000	$3,000	$5,000	$5,000	$6,000	$6,000
Total Payroll and Benefits Cost	$887,000	$808,000	$1,288,000	$386,000	$544,000	$846,000	$1,083,000	$1,143,000
Cost of Materials	$3,547,000	$2,313,000	$3,094,000	$833,000	$940,000	$1,397,000	$2,773,000	$2,491,000
Cost of Purchased Services	$99,000	$48,000	$97,000	$25,000	$29,000	$58,000	$242,000	$101,000
Capital Expenditures	$224,000	$95,000	$124,000	$44,000	$79,000	$77,000	$172,000	$91,000
Rent								
Buildings and equipment only	$19,000	$29,000	$43,000	$23,000	$27,000	$26,000	$95,000	$60,000
Depreciation	$132,000	$68,000	$90,000	$37,000	$51,000	$68,000	$60,000	$64,000
Gross Margin*	$464,000	$352,000	$646,000	$155,000	$308,000	$452,000	$1,063,000	$914,000
Gross Margin % of Sales*	8.6%	9.5%	12.0%	10.3%	15.6%	15.5%	19.4%	18.8%
Land Rental and Finance Costs on Debt	$287,000	$241,000	$447,000	$98,000	$241,000	$373,000	$904,000	$627,000
Profit Before Taxes	$177,000	$111,000	$199,000	$57,000	$67,000	$79,000	$159,000	$287,000
Profit Before Taxes, Percent of Sales	3.3%	3.0%	3.7%	3.8%	3.4%	2.7%	2.9%	5.9%

* Excluding land rental, finance costs, taxes and other miscellaneous.

Source: Data from 1997 Economic Census manufacturers, except profit before taxes from Risk Management Associates and land rental and finance costs estimated as residual.

Smallest Firm Profiles for Selected SIC Codes

Exhibit IIB-4.
Smallest Firm Profiles for Selected SIC Codes

SIC Code	*2421*	*2426*	*2431*	*2448*	*2499*	*2511*	*2515*	*2591*
Total Revenues	$1,877,000	$1,454,000	$1,469,000	$1,212,000	$1,134,000	$935,000	$1,948,000	$1,171,000
Expenses								
Direct Labor Costs								
# Employees	14	14	14	14	13	14	14	14
Payroll per Employee	$20,000	$22,000	$24,000	$18,000	$20,000	$19,000	$21,000	$20,000
Benefits per Employee	$5,000	$5,000	$5,000	$3,000	$5,000	$4,000	$5,000	$6.000
Total Payroll and Benefits Cost	$345,000	$374,000	$400,000	$298,000	$334,000	$315,000	$358,000	$355,000
Cost of Materials	$1,159,000	$823,000	$805,000	$649,000	$539,000	$459,000	$1,054,000	$598,000
Cost of Purchased Services	$34,000	$18,000	$25,000	$21,000	$17,000	$19,000	$87,000	$24,000
Capital Expenditures	$75,000	$52,000	$36,000	$36,000	$35,000	$25,000	$69,000	$15,000
Rent								
Buildings and equipment only	$7,000	$11,000	$12,000	$18,000	$15,000	$8,000	$34,000	$14,000
Depreciation	$46,000	$27,000	$25,000	$30,000	$29,000	$22,000	$21,000	$15,000
Gross Margin*	$211,000	$149,000	$166,000	$160,000	$165,000	$87,000	$325,000	$150,000
Gross Margin % of Sales*	11.2%	10.2%	11.3%	13.2%	14.6%	9.3%	16.7%	12.8%
Land Rental and Finance Costs on Debt	$115,000	$105,000	$120,000	$114,000	$126,000	$62,000	$269,000	$81,000
Profit Before Taxes	$96,000	$44,000	$46,000	$46,000	$39,000	$25,000	$56,000	$69,000
Profit Before Taxes, Percent of Sales	5.1%	3.0%	3.1%	3.8%	3.4%	2.7%	$2.9%	5.9%

* Excluding land rental, finance costs, taxes and other miscellaneous.

Source: Data from 1997 Economic Census manufacturers, except profit before taxes from Risk Management Associates and land rental and finance costs estimated as residual.

Largest Firm Profiles for Selected SIC Codes

Exhibit IIB-5.
Largest Firm Profiles for Selected SIC Codes

SIC Code	*2421*	*2426*	*2431*	*2448*	*2499*	*2511*	*2515*	*2591*
Total Revenues	$13,747,000	$10,071,000	$8,989,000	$5,726,000	$6,857,000	$5,780,000	$11,034,000	$6,111,000
Expenses								
Direct Labor Costs								
# Employees	70	70	70	67	68	71	71	70
Payroll per Employee	$26,000	$23,000	$24,000	$19,000	$22,000	$20,000	$27,000	$20,000
Benefits per Employee	$7,000	$5,000	$5,000	$3,000	$5,000	$4,000	$7,000	$5,000
Total Payroll and Benefits Cost	$2,264,000	$2,011,000	$2,057,000	$1,519,000	$1,827,000	$1,713,000	$2,380,000	$1,774,000
Cost of Materials	$8,936,000	$6,539,000	$5,321,000	$3,200,000	$3,409,000	$2,839,000	$5,648,000	$3,389,000
Cost of Purchased Services	$252,000	$130,000	$153,000	$97,000	$103,000	$115,000	$492,000	$127,000
Capital Expenditures	$622,000	$247,000	$203,000	$158,000	$231,000	$132,000	$350,000	$130,000
Rent								
Buildings and equipment only	$48,000	$74,000	$72,000	$86,000	$91,000	$51,000	$193,000	$75,000
Depreciation	$337,000	$184,000	$152,000	$139,000	$176,000	$135,000	$121,000	$81,000
Gross Margin*	$1,288,000	$886,000	$1,031,000	$527,000	$1,020,000	$795,000	$1,850,000	$535,000
Gross Margin % of Sales*	9.4%	8.8%	11.5%	9.2%	14.9%	13.8%	16.8%	8.8%
Land Rental and Finance Costs on Debt	$738,000	$453,000	$698,000	$395,000	$821,000	$691,000	$1,541,000	$174,000
Profit Before Taxes	$550,000	$433,000	$333,000	$132,000	$199,000	$104,000	$309,000	$361,000
Profit Before Taxes, Percent of Sales	4.0%	4.3%	3.7%	2.3%	2.9%	1.8%	2.8%	5.9%

* Excluding land rental, finance costs, taxes and other miscellaneous.

Source: Data from 1997 Economic Census of Manufacturers, except profile before taxes from Risk Management Associates and land rental and finance costs estimated as residual.

SECTION IIC.
Regulatory Impact Model—PR 1137

Cost Estimates for PR 1137—Background

As noted in the industry profile section of this FBA, PR 1137 is intended to reduce the release of fine particulate matter into the atmosphere from woodworking operations. This proposed rule is expected to impose additional costs on some firms in the wood products and furniture and fixtures industries that would be required to purchase and install new dust collection equipment and/or modify their disposal equipment and practices.AQMD staff developed facility level estimates of the added costs of PR 1137 through a three-step process. AQMD staff:

1. Conducted a mail survey of potentially affected firms to ascertain current volume of dust generation, control equipment and disposal practices;

2. Undertook eight site visits to a variety of potentially affected firms; and

3. Interviewed and collected price information from a number of control equipment vendors.

From this research, it is anticipated that the costs imposed on woodworking firms will vary depending on the size of their operation and the nature of their existing control equipment and disposal practices. The smallest firms in the industry (less than 10 employees) are anticipated to bear no additional costs from this rule, as the firms are unlikely to use a centralized pneumatic conveyance system. The largest firms in the industry (100 plus employees) are believed to also incur no additional costs, as AQMD research indicates they already have compliant control equipment and disposal practices in place.

Essentially, some firms in each remaining size category are expected to incur no costs, while others may require addition of either lower cost or higher cost control equipment. AQMD has also assumed all firms in the industry will incur an additional disposal cost of $225 per month. Control equipment alternatives and capital costs, by firm size, are shown in Exhibit IIC-1 on the following page.

Cost Estimates for PR 1137—Capital Costs

Exhibit IIC-1.
Range of Capital Cost Estimates for PR 1137 for Firms Incurring Such Costs

	Size of Establishment		
	Small	***Medium***	***Large***
Control Equipment Required	***10-19 Employees***	***20-49 Employees***	***50-99 Employees***
None			
Type of Equipment	None	None	None
Capital Cost	$0	$0	$0
Lowest Cost			
Type of Equipment	Shroud	Shroud	Enclosure
Capital Cost	$800	$800	$10,000
Highest Cost			
Type of Equipment	After Filter + Shroud	High-Efficiency Cyclone + Shroud	Baghouse + Enclosure
Capital Cost	$3,650	$20,400	$130,000

Note: AQMD staff developed cost estimates based on firm size, using small, medium and large. Independently, BBC developed firm profiles based on firm size, using smallest, average and largest. The size categories are consistent and, therefore, can be used interchangeably. In future efforts, BBC recommends consistency.
Source: BBC Research & Consulting from cost estimates developed by AQMD.

As many of the firms in the affected industry have not previously been subject to control equipment permitting by AQMD, there is some uncertainty regarding the number of firms that would face no capital costs, or be required to install either the lower or higher cost control equipment options. AQMD's worst case assumptions are approximately one-third of the firms in each affected size category would face no additional capital costs (except possibly for shrouds over disposal facilities), approximately one-third could comply using the lower cost control equipment option and approximately one-third would require the higher cost control option.

Cost Estimates for PR 1137—Annual Costs

On an annual basis, the costs incurred by firms affected by PR 1137 would include disposal costs (mentioned previously) and operations and maintenance costs. Firms that finance their capital equipment requirements by taking on additional debt would incur annual principal and interest payments on that debt. For purposes of this analysis, we have assumed all firms would finance capital equipment required by PR 1137, though, in reality, firms able to use the lowest cost control options might well pay these capital costs out of available cash flow. Based upon interviews with lenders, financing terms are assumed to be a 5-year loan at 7 percent interest.

Exhibit IIC-2 on the following page portrays the range of annualized costs, by firm size, for firms incurring costs as a result of PR 1137. We have focused on the lowest and highest end of the range of potential costs incurred by firms in each size category.

Cost Estimates for PR 1137—Annual Costs (cont.)

Exhibit IIC-2.
Range of Annualized Cost Estimates for PR 1137

	Small Firm	*Average Firm*	*Largest Firms*
No Capital Cost			
Capital Cost	$0	$0	$0
Principal	NA	NA	NA
Loan Term	NA	NA	NA
Interest Rate	NA	NA	NA
Annual Loan Payment	$0	$0	$0
O&M	$0	$0	$0
Disposal	$2,700	$2,700	$2,700
Total Annual Costs	$2,700	$2,700	$2,700
Lowest Cost			
Capital Cost	$800	$800	$10,000
Principal	$800	$800	$10,000
Loan Term	5	5	5
Interest Rate	7%	7%	7%
Annual Loan Payment	$197	$197	$2,462
O&M	$0	$0	$0
Disposal	$2,700	$2,700	$2,700
Total Annual Costs	$2,897	$2,897	$5,162
Highest Cost			
Capital Cost	$3,650	$20,400	$130,000
Principal	$3,650	$20,400	$130,000
Loan Term	5	5	5
Interest Rate	7%	7%	7%
Annual Loan Payment	$899	$5,022	$32,003
O&M	$315	$4,508	$19,832
Disposal	$2,700	$2,700	$2,700
Total Annual Costs	$3,914	$12,230	$54,535

Source: BBC Research & Consulting from cost estimates developed by AQMD.

Cost Impact Relative to Firm Financial Characteristics

Section IIB, Firm Profiles, of this FBA depicted typical annual financial performance of firms potentially affected by PR 1137, by size of affected firm. Exhibit IIC-3 summarizes the baseline financial performance information provided in Section IIB and combines that information with the annualized cost data presented on the previous page.

Exhibit IIC-3.
Estimated Annual Costs for PR 1137 Relative to Pre-Rule Firm Financial Performance

	Size of Establishment					
	Small		***Average***		***Large***	
Pre-PR 1137 Financial Characteristics						
Average Annual Revenue	$1,435,000		$3,985,000		$7,859,000	
Average Annual Profit Before Taxes	$52,000		$140,000		$277,000	
Impact of PR 1137 Costs	***Minimum***	***Maximum***	***Minimum***	***Maximum***	***Minimum***	***Maximum***
Estimated Annual Costs	$2,700	$3,914	$2,700	$12,230	$2,700	$54,535
Costs as Percentage of Revenue	0.2%	0.3%	0.1%	0.3%	0.0%	0.7%
Costs as Percentage of Profits Before Taxes	5.2%	7.5%	1.9%	8.7%	1.0%	19.7%

Source: AQMD cost estimates and BBC Research & Consulting financial estimates.

Before and After PR 1137 Cash Flow—Average Firms

Impact on cash flow has been identified as an important measure of short-term affordability. Exhibit IV-4 depicts a simplified statement of annual cash flows for the average firm potentially affected by PR 1137. This statement is based on the income statement type information provided in Section IIB, Firm Profiles, of this FBA, excluding depreciation (a non-cash cost).

Also depicted in Exhibit IIC-4 is the projected cash flow statement for the same average firm, with the range of potential annual costs of PR 1137 included. Disposal, operations and maintenance costs are reflected in purchased services. Principal payment on the loan (shown in year three of the five-year repayment period) is reflected in current capital costs, while interest payment on the loan (shown in year three of the five-year repayment period) is reflected in the other expense category.

Exhibit IIC-4.
Projected Annual Cash Flow Before and After PR 1137, Average Firm Size

		After PR 1137		*Change*	
	Before PR 1137	***Lowest Cost***	***Highest Cost***	***Lowest Cost***	***Highest Cost***
Total Revenues	$3,985,000	$3,985,000	$3,985,000	$0	$0
Cash Requirements					
Labor	$886,000	$886,000	$886,000	$0	$0
Materials	$2,245,000	$2,245,000	$2,245,000	$0	$0
Purchased Services	$87,000	$89,700	$94,208	$2,700	$7,208
Rent *	$39,000	$39,000	$39,000	$0	$0
Other **	$392,000	$392,036	$392,914	$36	$914
Capital Costs	$121,000	$121,161	$125,108	$161	$4,108
Total	$3,845,000	$3,847,897	$3,857,230	$2,897	$12,230
Cash Flow Before Taxes	$215,000	$212,103	$202,770	($2,897)	($12,230)

* Equipment and buildings only.
** Land rental, finance costs, etc.
Note: Year 3 of 5-year financing period.
Source: BBC Research & Consulting.

Before and After PR 1137 Cash Flow—Smallest Firms

Exhibit IIC-5 depicts annual cash flow before and after PR 1137 for the smallest potentially affected firms.

Exhibit IIC-5.
Projected Annual Cash Flow Before and After PR 1137, Smallest Firm Size

		After PR 1137		*Change*	
	Before PR 1137	***Lowest Cost***	***Highest Cost***	***Lowest Cost***	***Highest Cost***
Total Revenues	$1,435,000	$1,435,000	$1,435,000	$0	$0
Cash Requirements					
Labor	$352,000	$352,000	$352,000	$0	$0
Materials	$782,000	$782,000	$782,000	$0	$0
Purchased Services	$31,000	$33,700	$34,015	$2,700	$3,015
Rent *	$15,000	$15,000	$15,000	$0	$0
Other **	$102,000	$102,036	$102,164	$36	$164
Capital Costs	$45,000	$45,161	$45,735	$161	$735
Total	$1,355,000	$1,357,897	$1,358,914	$2,897	$3,914
Cash Flow Before Taxes	$80,000	$77,103	$76,086	($2,897)	($3,914)

* Equipment and buildings only.
** Land rental, finance costs, etc.
Source: BBC Research & Consulting.

Before and After PR 1137 Cash Flow—Largest Firms

Exhibit IIC-6 depicts annual cash flow before and after PR 1137 for the largest potentially affected firms.

Exhibit IIC-6.
Projected Annual Cash Flow Before and After PR 1137, Largest Firm Size

		After PR 1137		*Change*	
	Before PR 1137	***Lowest Cost***	***Highest Cost***	***Lowest Cost***	***Highest Cost***
Total Revenues	$7,859,000	$7,859,000	$7,859,000	$0	$0
Cash Requirements					
Labor	$1,912,000	$1,912,000	$1,912,000	$0	$0
Materials	$4,435,000	$4,435,000	$4,435,000	$0	$0
Purchased Services	$165,000	$167,700	$187,532	$2,700	$22,532
Rent *	$70,000	$70,000	$70,000	$0	$0
Other **	$483,000	$483,448	$488,824	$448	$5,824
Capital Costs	$219,000	$221,014	$245,179	$2,014	$26,179
Total	$7,284,000	$7,289,162	$7,338,535	$5,162	$54,535
Cash Flow Before Taxes	$426,000	$420,838	$371,465	($5,162)	($54,535)

Source: BBC Research & Consulting.

Potential Impacts on Profitability and Cash Flow by Industry Segment (Selected SIC Codes)

The preceding pages have depicted potential impacts of PR 1137 on annual cash flow of average, small and large firms representing a composite of the affected industries.

Based upon the more specific firm profiles for individual industry segments (SIC codes) presented in Section IIB, similar estimates can be developed at the more detailed level. These segment-specific estimates may, however, be less reliable than the estimated impacts on the composite firms presented previously. There is little or no available information on the proportion of firms in individual SIC codes that would require no additional controls or have to adopt the least or most expensive control options.

Potential Impacts by Industry Segment—Average Firms

Exhibit IIC-7.
Profitability and Cash Flow Impacts by Industry, Average Firms

SIC Code	*2421*	*2426*	*2431*	*2448*	*2499*	*2511*	*2515*	*2591*
Total Revenues	$5,372,000	$3,713,000	$5,382,000	$1,503,000	$1,978,000	$2,924,000	$5,488,000	$4,864,000
# Employees	27	28	40	17	20	33	33	40
Depreciation	$132,000	$68,000	$90,000	$37,000	$51,000	$68,000	$60,000	$64,000
Profit Before Taxes	$177,000	$111,000	$199,000	$57,000	$67,000	$79,000	$159,000	$287,000
Annual Cash Flow	$309,000	$179,000	$289,000	$94,000	$118,000	$147,000	$219,000	$351,000
Minimum Annual Costs	$2,897	$2,897	$2,897	$2,897	$2,897	$2,897	$2,897	$2,897
Maximum Annual Costs	$12,230	$12,230	$12,230	$12,230	$12,230	$12,230	$12,230	$12,230
Costs as a % of Cash Flow (min)	0.9%	1.6%	1.0%	3.1%	2.5%	2.0%	1.3%	0.8%
Costs as a % of Cash Flow (max)	4.0%	6.8%	4.2%	13.0%	10.4%	8.3%	5.6%	3.5%
Costs as a % of Profit Before Taxes (min)	1.6%	2.6%	1.5%	5.1%	4.3%	3.7%	1.8%	1.0%
Costs as a % of Profit Before Taxes (max)	6.9%	11.0%	6.1%	21.5%	18.3%	15.5%	7.7%	4.3%

Source: Data from 1997 Economic Census of Manufacturers; Risk Management Associates; and BBC Research & Consulting (BBC) estimates.

Potential Impacts by Industry Segment—Smallest Firms

Exhibit IIC-8.
Profitability and Cash Flow Impacts by Industry, Smallest Firms

SIC Code	*2421*	*2426*	*2431*	*2448*	*2499*	*2511*	*2515*	*2591*
Total Revenues	$1,877,000	$1,454,000	$1,469,000	$1,212,000	$1,134,000	$935,000	$1,948,000	$1,171,000
# Employees	14	14	14	14	13	14	14	14
Depreciation	$46,000	$27,000	$25,000	$30,000	$29,000	$22,000	$21,000	$15,000
Profit Before Taxes	$96,000	$44,000	$46,000	$46,000	$39,000	$25,000	$56,000	$69,000
Annual Cash Flow	$142,000	$71,000	$71,000	$76,000	$68,000	$47,000	$77,000	$84,000
Minimum Annual Costs	$2,897	$2,897	$2,897	$2,897	$2,897	$2,897	$2,897	$2,897
Maximum Annual Costs	$3,914	$3,914	$3,914	$3,914	$3,914	$3,914	$3,914	$3,914
Costs as a % of Cash Flow (min)	2.0%	4.1%	4.1%	3.8%	4.3%	6.2%	3.8%	3.4%
Costs as a % of Cash Flow (max)	2.8%	5.5%	5.5%	5.1%	5.8%	8.3%	5.1%	4.7%
Costs as a % of Profit Before Taxes (min)	3.0%	6.6%	6.3%	6.3%	7.4%	11.6%	5.2%	4.2%
Costs as a % of Profit Before Taxes (max)	4.1%	8.9%	8.5%	8.5%	10.0%	15.7%	7.0%	5.7%

Source: Data from 1997 Economic Census of Manufacturers; Risk Management Associates; and BBC Research & Consulting (BBC) estimates.

Potential Impacts by Industry Segment—Largest Firms

Exhibit IIC-9.
Profitability and Cash Flow Impacts by Industry, Largest Firms

SIC Code	*2421*	*2426*	*2431*	*2448*	*2499*	*2511*	*2515*	*2591*
Total Revenues	$13,747,000	$10,071,000	$8,989,000	$5,726,000	$6,857,000	$5,780,000	$11,034,000	$6,111,000
# Employees	70	70	70	67	68	71	71	70
Depreciation	$337,000	$184,000	$152,000	$139,000	$176,000	$135,000	$121,000	$81,000
Profit Before Taxes	$550,000	$433,000	$333,000	$132,000	$199,000	$104,000	$309,000	$361,000
Annual Cash Flow	$887,000	$617,000	$485,000	$271,000	$375,000	$239,000	$430,000	$442,000
Minimum Annual Costs	$5,162	$5,162	$5,162	$5,162	$5,162	$5,162	$5,162	$5,162
Maximum Annual Costs	$54,535	$54,535	$54,535	$54,535	$54,535	$54,535	$54,535	$54,535
Costs as a % of Cash Flow (min)	0.6%	0.8%	1.1%	1.9%	1.4%	2.2%	1.2%	1.2%
Costs as a % of Cash Flow (max)	6.1%	8.8%	11.2%	20.1%	14.5%	22.8%	12.7%	12.3%
Costs as a % of Profit Before Taxes (min)	0.9%	1.2%	1.6%	3.9%	2.6%	5.0%	1.7%	1.4%
Costs as a % of Profit Before Taxes (max)	9.9%	12.6%	16.4%	41.3%	27.4%	52.4%	17.6%	15.1%

Source: Data from 1997 Economic Census of Manufacturers; Risk Management Associates; and BBC Research & Consulting (BBC) estimates.

SECTION IID.
Impact Assessment—PR 1137

Affordability of PR 1137

Key affordability issues can include impact on cash flow, impact on profitability and ability to finance pollution control equipment. Given indications that the firms potentially affected by PR 1137 generally compete with firms outside the region, the affordability assessment has incorporated the worst case assumption that no cost increases can be passed along to customers by raising prices.

As illustrated with the regulatory impact model in the preceding section, PR 1137 is anticipated to have a relatively modest effect on most impacted firms. All firms between 10 and 100 employees will likely incur annual costs of $2,700 to improve disposal practices. For some firms, this is the extent of the impact. Firms having to adopt some type of control technology will sometimes have a lower cost option of approximately $800, which translates into an annual loan payment of $197 if they choose to finance.

Other firms needing to adopt control technologies will face higher costs. The worst-case scenario is a larger firm (between 49 and 100 employees) that has to adopt a cyclone/baghouse control mechanism. This would imply annual costs (during the five-year loan repayment period) of $55,000 based on an equipment cost of $130,000.

Impact on Cash Flow

Impact on cash flow is a key measure of short-term affordability. In very simple terms, if facilities cannot maintain positive cash flow after regulations are imposed, they may be forced to borrow funds for operating purposes or cease operations. Further, positive cash flow provides funds for depreciation (to replace capital equipment as it is used up) and profits that reward and encourage investment in the firm.

By combining information on costs and cash flow (presented in the previous section's Exhibits IIC-4 through IIC-6), we can see that the impact on cash flow for firms of varied sizes ranges from less than one percent to approximately 13 percent. Larger firms that need to adopt the most expensive technology would see the largest impacts. For firms requiring the highest cost compliance approach, impacts range from about a $4,000 (five percent) reduction in annual cash flow for small firms to about a $55,000 (13 percent) annual reduction in cash flow for the largest firms. In this worst-case scenario, average-sized firms would experience a proportional impact on cash flow similar to small firms—about $12,000 or a six percent reduction.

Impacts on more specific industry segments can be analyzed by combining information from the firm profile section of the report with the cost data in the previous section, regulatory impact assessment. Specifically, a cash flow figure can be determined for average, small and large firms within each of the eight SIC codes selected for study, by summing depreciation and profits before taxes. This figure is divided by costs to produce a percentage impact on cash flow.

Affordability of PR 1137 (cont.)

The results of this analysis indicate that average sized firms in industry 2448 (wood pallets) and 2499 (other wood products) may be in the tightest cash flow situation prior to any new regulation. Small and large firms in industry 2511 (wood furniture) also have relatively tight cash flow situations.

For firms in industry 2448 that must adopt the most expensive control option, cash flow impacts could range from 5 percent for small firms to 20 percent for larger firms. Wood furniture industry (2511) firms having to adopt the most expensive option could see an impact on cash flow of 8 percent for the smallest and average-sized firms to 20 percent for the largest firms. 2448 firms that can adopt less expensive technologies or face no capital costs would experience less than a 4 percent impact on cash flow. Firms in the 2511 industry that can adopt less expensive options may see between a 1 and 6 percent impact on cash flow.

Impact on Profitability

Profitability is a key measure of long-term affordability. Profitability rewards business owners and encourages further investment in the facility, which increases productivity over the long-term.

As indicated in Section IIC, Regulatory Impact Model, the projected impacts on profitability range from about a 5 percent to 8 percent reduction for the smallest affected firms, to between 1 percent and 20 percent for the largest potentially affected firms.

Once again, impacts on more specific industry segments can be analyzed by combining information from the firm profile section of the report with the cost data in Section IIC, Regulatory Impact Assessment. Specifically, profits before taxes can be divided by estimated costs to produce a percentage impact on profits.

Similar to the results from a cash flow perspective, for average-sized firms, industries 2448 (wood pallets) and 2449 (other wood products) are most impacted. If these firms had to undertake the most expensive compliance option for their size category, costs would reflect 22 and 18 percent of profits before taxes, respectively. If they can utilize the least expensive technology, costs would reflect 5 and 4 percent of profits before taxes, respectively.

Once again, small and large firms would appear to be the most at risk in industry 2511 in terms of profitability changes. In particular, the largest potentially affected firms in industry 2511 typically have an estimated baseline annual profits before taxes of $104,000. If some of these firms have to adopt the most expensive compliance approach, they could see a reduction in profits of up to 52 percent. If the large firms in this industry can adopt the least expensive control option or avoid new capital equipment altogether, the impact on their profits would be 5 percent.

Affordability of PR 1137 (cont.)

Ability to Finance

Financing pollution control equipment can be challenging for regulated firms, as commercial lenders may consider such investments to not be productivity enhancing, and thus the investment offers no internal payback. The most important condition for obtaining financing is that cash flow must be sufficient to more than cover debt repayment. When lenders are concerned about annual coverage, they will look more closely at balance sheet conditions, such as how leveraged the firm may already be.

In most cases, the magnitude of impacts on cash flow described previously indicate that typical firms potentially affected by PR 1137 should have ample coverage to meet annual debt service requirements. Larger firms having to adopt the most expensive control technologies may be an exception. As was also noted in Section IIC of this FBA, the capital costs of PR 1137 are low enough (except for firms requiring a baghouse) that many firms may opt to pay for them out of internal cash flow rather than seeking financing.

Competitiveness Impacts of PR 1137

The principal competitiveness concern for new regulations is whether the costs or changes mandated by the requirements will affect the ability of local firms to compete with competitors outside the regulated region. Other potential competitiveness issues can include impacts on the establishment of new businesses in the regulated industry.

Regional Competitiveness

As indicated in Section IIA, Industry Profile, firms potentially affected by PR 1137 are typically in competition with similar firms located outside the LA Basin. As further noted in that section, the wood products and woodworking industries have performed well relative to the nation as a whole since the mid-1990s, after a substantial dip in the late 1980s.

While the affordability assessment assumed that potentially affected firms would absorb any costs from PR 1137 due to the competitive nature of these industries, potential price increases are a key measure for evaluating regional competitiveness. This measure can be evaluated by considering the annual costs of the regulation relative to the annual revenues of affected firms. Data from the firm profile and regulatory impact assessment indicate that the annual costs of even the most expensive compliance approaches for each firm size group represent less than one percent of annual firm revenues. Even if some firms are in a position to pass along added costs from PR 1137, the resulting change in their prices is likely to be very small.

With the exception of larger establishments requiring a baghouse, the relatively small capital costs of PR 1137 would likely represent a very small proportion of the total costs of starting a new facility in the affected industries.

Impacts on Small and Disadvantaged Businesses

AQMD and its stakeholders are concerned about the potential for new air quality regulations to have disproportionate impacts on small businesses and/or minority owned businesses.

Small Businesses

AQMD's survey, site visits and analysis indicates that the smallest firms in the industries potentially affected by PR 1137 (those with less than 9 employees) will not incur additional costs due to this regulation. The analysis presented in preceding sections of this assessment indicates that the relatively low cost compliance options available to the smallest affected group (facilities with 10 to 19 employees) will not have disproportionate impacts on these facilities. The annualized compliance cost burden for the smallest affected firms (as a percentage of revenue, cash flow or profits) is generally less than the burden placed on average firms and the largest firms—if those firms have to adopt the most expensive compliance approach.

Disadvantaged Businesses

In the absence of detailed financial and ownership information on each of the individual firms potentially affected by PR 1137, and certainty about which firms will have to adopt which compliance technique, it is not possible to know for certain whether minority or ethnic-owned businesses would be disproportionately affected by the proposed rule.

Trade association information is believed to provide the best available insight into the prevalence of minority ownership in the potentially affected industries. Association representatives believe that a substantial proportion of firms in these industries are minority owned.

1990 Census Public Use Microdata Sample data indicate that 66 percent of the employees in the wood products industry (SIC 24) and 73 percent of the employees in the furniture and fixtures industry (SIC 25) are from minority groups.

Cumulative Impacts

Stakeholders and AQMD are concerned about the potential for cumulative impacts from proposed regulations, in combination with previous AQMD regulations affecting the same industries.

Prior AQMD Regulations

As noted in the industry profile section, some, but not all, of the industries potentially affected by PR 1137 are also regulated under Rule 1136 (adopted in 1983) which was intended to reduce volatile organic compound releases from paint coatings and solvents. Rule 1104 (adopted in 1999) applied to one firm in the industries potentially affected by PR 1137, but that firm had less than 10 employees and is believed to not be affected by PR 1137.

Cumulative Impacts

Rule 1136 apparently had a substantial impact during the 1980s on the regulated industries. This technology-forcing rule required reformulated coatings and solvents and various studies indicate the rule may have been partly responsible for the movement of LA Basin furniture producers to operations in Mexico during the late 1980s. Interviews with business owners in the affected industries indicate that both quality and cost of product were substantially affected by Rule 1136.

The recent performance of the LA Basin wood products and furniture industries, described in Section IIA, suggests that the impacts of Rule 1136 have diminished as technology has improved. Interviews with firms affected by Rule 1136 indicated that the quality of revised coatings has improved and their cost has become more competitive. With the possible exception of large firms requiring a baghouse, the potential for significant cumulative impacts from the addition of PR 1137 appears to be small. However, interviews with firms in these industries conducted by BBC during the first phase of our work for AQMD indicates that this industry remains actively concerned about the impact of AQMD regulations.

SECTION III.
Case Study #2—PAR 1421

SECTION IIIA.
Industry Profile—PAR 1421

Describing PAR 1421

The purpose of PAR 1421 is to protect public health by reducing perchloroethylene emissions from dry cleaning systems. Since the PAR was still under development when this case study was conducted, two different potential scenarios for the requirements under the PAR were developed by AQMD for purposes of this assessment: 1) non-perc scenario, and 2) perc-scenario.

Non-perc scenario. Under PAR 1421, non-perc scenario, new dry cleaning machines in the LA Basin would be required to employ alternative technologies to perc. This version of the PAR would affect both new dry cleaning operations and existing operations replacing existing machines or purchasing additional machines. Existing perc machines would be gradually phased out, as they reached the end of their useful lives.

Identified alternatives to perc machines includes the following.

- Wet cleaning
- Solvent (hydrocarbon) machines
- CO2 cleaning

Perc scenario. The potential regulatory requirements under the PAR 1421 perc scenario are somewhat more complex than under the non-perc scenario. This scenario assumes the following.

- New dry cleaning machines in the LA Basin would be required to employ alternative technologies to perc.
- Larger dry cleaning operations that add a second machine, or replace an existing second machine, would have to employ an alternative technology to perc for that second machine.

Existing perc machines employing older technologies (converted machines and those with only primary controls) would have to be replaced within 10 years of their original permitting date. They could be replaced with perc machines. AQMD believes that ten years reflects the typical useful life of existing equipment, though some dry cleaners reportedly continue to use their machines for longer periods of time prior to replacement.

Potentially Impacted Firms

AQMD staff determined that all dry cleaners in the L.A. Basin that use perc machines will be impacted by PAR 1421.

The PAR will impact the dry cleaning industry captured in SIC codes 7215, Coin-operated Laundries and Dry cleaning, 7216, Dry cleaning Plants except Rug Cleaning, and 7218, Industrial Launderers. SIC 7215 equates to NAICS code 812310, SIC 7216 roughly to NAICS 812320, and SIC 7218 to NAICS code 812332.

In 1993, EPA estimated that the proportion of coin-operated laundries and dry cleaners (SIC 7215) that actually possessed dry cleaning equipment was roughly 11 percent, or 3,000 firms, nationwide. Later estimates indicated that the truer ratio of facilities in this industry segment with dry cleaning equipment was more likely less than one-half of one percent (EPA Sector Notebook). With such a small number of coin-operated dry cleaners in existence, and with the difficulty of separating out the economic activity that comes solely from the dry cleaning operations, this report excluded SIC 7215 from analysis.

PAR 1421 will also impact industrial dry cleaners captured in SIC code 7218; however, this industrial launderer category does not break out industrial dry cleaners specifically. Moreover, one cannot easily tease out the economic activity of the dry cleaning aspect of industrial laundering, for it is often just one element of what an individual industrial laundering firm does. The EPA also pointed out that only an estimated 25 percent of industrial launderers nationwide, or 325 firms, had dry cleaning capacity in 1993 (Dry Cleaning Sector Notebook). Three hundred twenty-five industrial dry cleaning facilities nationwide represent less than one percent of the total number of dry cleaning firms. With the difficulty of determining the dry cleaning-specific economic activity of firms in SIC 7218 and the relatively small number of firms that may be in the L.A. Basin, BBC omitted industrial dry cleaners from the impact analysis that follows.

Consequently, the remainder of this assessment focuses solely on the industry segment comprised of traditional commercial dry cleaners, SIC 7216. National trade publications indicate the vast majority of dry cleaners throughout the country use perc machines, with the exception of areas near the Gulf Coast using petroleum cleaning and some recent usage of alternative technologies. The study team has assumed, for purposes of this assessment, that all L.A. Basin firms in SIC 7216 use perc machines.

Industry Composition

More than two-thirds of the dry cleaning firms in the L.A. Basin employ one to four people. Nationally, the dry cleaning industry has a slightly higher concentration of larger firms, but the industry nationwide is still dominated by businesses with only one to four employees. The following table depicts the distribution of dry cleaning firms, with paid employees, by size and location. County Business Patterns also indicates there are an additional 1,300 dry cleaners in the District that consist of just self-employed owner/operators—bringing the total number of dry cleaning firms to about 2,700.

Exhibit IIIA-1.
Proportion of LA Basin Dry Cleaning Firms by Size, 1995 and 1999

	1995					1999				
County	***1-4***	***5-9***	***10-19***	***20 +***	***Total***	***1-4***	***5-9***	***10-19***	***20 +***	***Total***
Los Angeles	447	156	74	51	728	594	144	74	58	869
Orange	171	62	28	8	269	249	62	35	15	362
Riverside	34	20	8	3	65	49	22	6	3	81
San Bernardino	54	20	5	2	81	67	20	6	1	94
LA Basin Total	706	258	115	64	1,143	958	249	122	77	1,406
% of LA Basin	***62%***	***23%***	***10%***	***6%***	***100%***	***68%***	***18%***	***9%***	***5%***	***100%***
United States	10,061	5,463	3,676	1,656	20,856	11,852	5,085	3,298	1,670	21,906
% of US	***48%***	***26%***	***18%***	***8%***	***100%***	***54%***	***23%***	***15%***	***8%***	***100%***

Source: U.S. Census Bureau, County Business Patterns.

Dunn and Bradstreet data on the proportion of dry cleaning firms owned by persons from ethnic or racial minority groups are not reliable or accurate. Informal estimates by local industry representatives indicate that the majority of firms are owned by persons from ethnic or racial minority groups. Korean-Americans have a particularly strong presence in the industry.

Dry Cleaning Markets & Competition

Most dry cleaning firms perform services for a small, local market. Their customers include businesses, households and individual consumers. Dry cleaners, as an industry, are major purchasers of energy and chemicals for the dry cleaning process. Dry cleaners wash clothes just as a typical person does in his or her home, though the clothes are laundered in dry cleaning solvents instead of water, and additional services, such as finishing and pressing, are typically included. The majority of dry cleaners are "mom and pop" commercial operations with one or two dry cleaning machines. Their customers come from a small geographic area around their location (typically a 1.5 to 2 mile radius). Workgroup participants also indicated that some landlords are increasingly unwilling to renew leases to dry cleaners due to environmental and liability concerns.

Competition amongst dry cleaners in the L.A. Basin is very strong. In the past few years, in the opinion of the dry cleaners in the PAR 1421 workgroup, a lack of real barriers to entry have allowed too many dry cleaners to open new operations in the Basin, which has caused price-cutting and has pushed many of the smaller dry cleaners out of business. Dry cleaners (with the exception, perhaps, of some industrial dry cleaners) do not face competition from outside the L.A. Basin.

Factors and Trends Impacting the Industry

An AQMD workgroup with dry cleaning industry representatives indicated some general industry trends.

- Per capita demand for dry cleaning is in decline due to more casual clothing styles, new fabrics, the changing nature of the economy and customers' environmental concerns.
- Competition is stiff, and prices are falling and pushing many smaller shops out of business.
- Shops will become larger and more professional in coming years, while continuing to struggle for market share.
- Potential growth areas are new commercial developments that follow suburban sprawl.
- There is a lack of barriers to entry, so there may be more dry cleaning firms than the market can sustain over the long-term.

As L.A. Basin dry cleaners indicated in the workgroup, the number of dry cleaning firms in the L.A. Basin has grown more rapidly than the population in recent years. Fewer customers per firm and decreasing demand due to casual clothing styles and environmental concerns reportedly squeeze profit margins and tend to favor larger firms with more economies of scale.

Prior AQMD Regulations

The dry cleaning industry has been previously regulated by AQMD.

Rule 1421: Control of Perchloroethylene Emissions from Dry Cleaning Systems

- The original version of Rule 1421 was adopted in December of 1994. It was amended in 1997. The current rulemaking process is focused on another amendment to Rule 1421.
- As amended in 1997, Rule 1421 requires perc dry cleaning facilities to phase out transfer, vented, and self-service machines, and requires the use of a closed-loop, dry-to-dry machine. Dry cleaners must also install primary and/or secondary controls as appropriate and institute good operating, reporting, and record keeping practices.

Rule 1102: Dry cleaners Using Solvent Other Than Perchloroethylene

- This rule impacted all other dry cleaning firms not affected by PAR 1421.
- The rule aimed to reduce the release of volatile organic compounds (VOCs) by eliminating the use of dip tanks and drying cabinets and limiting the use of and exposure to the atmosphere of transfer machines. It also required best practice measures for control of VOCs.

Rule 1102.1: Perchloroethylene Dry cleaning Systems

- AQMD repealed Rule 1102.1 in 1994.

SECTION IIIB.
Firm Profile—PAR 1421

How Firm Profiles Were Developed

To develop the firm profiles, BBC worked with AQMD staff to identify dry cleaners likely to be impacted by PAR 1421.

- AQMD established that any dry cleaner operating a perc machine would be impacted by PAR 1421.
- Perc dry cleaners are found primarily in SIC codes 7215, 7216, and 7218. As explained earlier, this analysis focuses entirely on SIC 7216.

After identifying the affected dry cleaners in the L.A. Basin, BBC derived a generalized operational and financial profile of the "average" firm based on data from the 1997 Economic Census, the Risk Management Association's Statement Studies, and results from AQMD's workgroup with L.A. dry cleaners. Firm profiles are based both on secondary data and on primary data gathered directly from dry cleaner facility owners.

How Firm Profiles Were Developed (cont.)

Certain characteristics of PAR 1421 facilitated the use of primary, local data collected from L.A. Basin dry cleaners. In particular, the set of firms affected by the proposed amendment are all in essentially the same business and are using similar processes (in contrast to the PR 1137 case study, which examined a wide variety of firms and industry segments). Direct input from local firms was also particularly critical for PAR 1421 because much less financial detail is available from the National Economic Census for non-manufacturing industries such as dry cleaning.

Exhibit IIIB-1 below highlights the four major size sectors of the dry cleaning industry in the L.A. Basin. In the workgroup, dry cleaner facility owners indicated that the two smallest size classes (firms with 1 to 4 employees and firms with 5 to 9 employees) were the most important to analyze, since they represented most dry cleaning firms, along with firms with 20 and more employees for comparison to the smaller firms. Exhibit IIIB-1 shows the proportion of L.A Basin dry cleaning firms by size and county.

Exhibit IIIB-1.
Potentially Regulated Establishments by Size, 1999

Source:
U.S. Census Bureau, County Business Patterns.

	1999				
County	***1-4***	***5-9***	***10-19***	***20+***	***Total***
Los Angeles	68%	17%	8%	7%	100%
Orange	69	17	10	4	100
Riverside	60	28	8	4	100
San Bernadino	71	21	7	1	100
LA Basin Total	68%	18%	9%	5%	100%

Average Firm Profile

During the session with the PAR 1421 workgroup in September 2001, representatives of the LA Basin dry cleaning industry provided AQMD and the study team with ranges of typical financial characteristics for a dry cleaning operation with two paid employees. The workgroup also indicated that this small operation was representative of the largest number of dry cleaners in the area. Facilities of this size would typically have a single cleaning machine.

To simplify subsequent analyses, the study team then focused on the midpoint of the ranges of financial data provided by the workgroup for this small operation. Exhibit IIIB-2 below also provides comparative data from limited secondary source information on dry cleaning firm financial characteristics, scaled to match the size of operation selected by the workgroup. Comparing the data from the workgroup and the national secondary data indicates that the firm profile produced by the workgroup exhibits higher revenues, higher costs and higher profits than the national secondary data. This may reflect inaccuracies introduced by the study team in scaling the national data from the national average dry cleaner size of five employees to the smaller firm size profiled by the workgroup. Overall, however, the two sets of numbers reinforce one another.

While the levels of profiles reported by the working group and derived from secondary sources are relatively consistent, these profit levels appear to suggest the small dry cleaning shop owner is compensated less than their employees. This finding is counterintuitive and raises concerns that reported financial data (from either source) may not fully capture the financial returns to the owner.

Exhibit IIIB-2.
Characteristics of Dry Cleaning Operations with 2 Employees

	Workgroup	*Workgroup Midpoint*	*Secondary Sources**
# Employees	2	2	2
Total Revenues	$120,000-$180,000	$150,000	$118,800
Expenses			
Labor	2 x $8-10/hr + FICA & WC	$41,000	$31,200
Utilities	$4,800-$10,800	$7,800	NA-Included in Other
Rent	$24,000-$36,000	$30,000	NA-Included in Other
Other	NA	$59,950	$81,200
Total	***NA***	***$138,750***	***$112,400***
Profit Before Taxes	$6,000-$18,000	$11,250	$6,300
Profit Before Taxes, Percent of Sales	5-10%	7.5%	5.3%

* Secondary source information scaled down from data for average firm size of 5 employees to 2 employee operation for comparability.

Source: U.S. Census Bureau's 1997 Economic Census, Risk Management Association's Statement Studies 2000, and AQMD dry cleaners workgroup.

Medium-Sized Firm Profile

As shown in Exhibit IIIB-3 below, the PAR 1421 workgroup also provided its estimates of the typical financial characteristics of dry cleaning firms of the next most common size (7 employees) and of the largest firms found in the LA Basin (25 or more employees). For a firm with 7 employees, the workgroup again provided ranges of financial characteristics that the study team has converted to midpoint estimates. Facilities of this size would also, typically, have a single cleaning machine.

Exhibit IIIB-3.
Characteristics of Dry Cleaning Operations with 7 Employees

	Workgroup	*Workgroup Midpoint*
# Employees	7	7
Total Revenues	$360,000-$540,000	$450,000
Expenses		
Labor	7 x $8-10/hr + FICA & WC	$144,000
Utilities	$14,400-$32,400	$23,400
Rent	$36,000-$81,000	$58,500
Materials, purchased services, capital, depreciation, and other	NA	$190,350
Total	***NA***	***$416,250***
Profit Before Taxes	$18,000-$54,000	$33,750
Profit Before Taxes, Percent of Sales	5-10%	7.5%

Source: AQMD dry cleaners workgroup, September 2001.

Largest Firm Profile

Exhibit IIIB-4 below is the workgroup's profile for a dry cleaning operation with 25 employees. The workgroup indicated there are probably fewer than two-dozen dry cleaners of this size in the LA Basin, out of a total of more than 1,400 operations. Facilities of this size would have two cleaning machines.

Exhibit IIIB-4.
Characteristics of Dry Cleaning Operations with 25 Employees

Source:
AQMD dry cleaners workgroup, September 2001.

	Workgroup
# Employees	25
Total Revenues	$960,000
Expenses	
Labor	$515,000
Utilities	$45,600
Rent	$96,000
Materials, purchased services, capital, depreciation, and other	$255,400
Total	***$912,000***
Profit Before Taxes	$48,000
Profit Before Taxes, Percent of Sales	5%

SECTION IIIC.
Regulatory Impact Model—PAR 1421

Cost Estimates for PAR 1421—Two Regulatory Scenarios

As noted in the industry profile section of this FBA, PAR 1421 is intended to reduce human health risks resulting from exposure to perc. Since the PAR was still under development when this case study was conducted, two different potential scenarios for the requirements under the PAR were developed by AQMD for purposes of this assessment:

- Non-perc scenario, and
- Perc-scenario.

Analysis of each of the two scenarios has multiple dimensions, including variations in terms of firm size, compliance technology and new versus existing firms. To make the regulatory impact model portion of this case study as easy to follow as possible, this section first presents the completed regulatory impact model for the non-perc scenario, then presents the corresponding model for the perc scenario. The final section of this case study, the Impact Assessment, compares the results of the two scenarios.

In this section, cost estimates are shown relative to revenues and profits, but not relative to annual cash flows. This is because the firm profiles developed through the PAR 1421 workgroup did not include estimates of annual depreciation expenses, a necessary component to understand cash flow.

Cost Estimates for PAR 1421—Non-Perc Scenario Description

Under PAR 1421, non-perc scenario, new dry cleaning machines in the LA Basin would be required to employ alternative technologies to perc. This version of the PAR would affect both new dry cleaning operations and existing operations replacing existing machines or purchasing additional machines. Existing perc machines would be gradually phased out, as they reached the end of their useful lives.

Identified alternatives to perc machines include:

- Wet cleaning;
- Solvent (hydrocarbon) machines; and
- CO2 cleaning.

The last of the three technologies identified above, CO2 cleaning, is relatively new, as yet little used throughout the U.S. and relatively expensive in terms of capital costs. Because it appears the least likely to be adopted on a widespread basis, the following analyses focus only on the first two alternatives.

For purposes of this assessment, it was assumed that if this proposed amendment is adopted, any new dry cleaning machines in the LA Basin would have to employ wet cleaning or solvent (hydrocarbon) technology. AQMD developed estimates of the added costs of PAR 1421 by:

- Site visits to six dry cleaners using perc and/or alternative technologies;
- Review of industry publications and sales brochures;
- Review of the AQMD permit database; and
- Interviews with dry cleaning equipment manufacturers.

From this research it is anticipated that the costs imposed on dry cleaning firms would essentially consist of the difference between the capital, operations and maintenance costs associated with the purchase (or lease) and use of alternative technology dry cleaning machines, relative to the costs those firms would have experienced using perc machines.

High and Low Capital Costs Estimates for Non-Perc Scenario

AQMD developed a range of estimates regarding the capital costs of dry cleaning machines using the current perc technology and the alternative technologies. AQMD also estimated ranges of installation costs for each technology.

Given the ranges surrounding most of the cost estimates, the study team developed a low and high estimate of costs. The low estimate represents the lowest potential cost under the non-perc scenario by using the upper end of the ranges of cost estimates for perc cleaning (the baseline technology) and the lower end of the ranges of cost estimates for each of the alternative technologies. The high estimate provides an upper bound on the cost estimates for the proposed amendment by taking the opposite approach, using the lower end of the ranges for perc cleaning and the upper end of the cost ranges for each of the alternative technologies.

The low estimate of the potential capital costs, for each size of dry cleaning operation profiled in the previous section, are presented on the following page in Exhibit IIIC-1. The incremental, additional capital cost of the alternative technologies for firms purchasing and installing new machines range from a cost savings of $26,000 for a single, wet cleaning machine and installation to additional capital costs of $16,000 for a large firm purchasing and installing two solvent cleaning machines.

Low Capital Costs Estimates for Non-Perc Scenario

Exhibit IIIC-1.
Low Estimate Capital Costs for PAR 1421

Cleaning Technology	Size of Establishment: Smallest/Medium 2 or 7 employees (single machine)	Size of Establishment: Large 25 employees (two machines)
Perc (Baseline)		
Equipment Cost	$50,000	$100,000
Installation Cost	$5,000	$10,000
Total Capital Cost	$55,000	$110,000
Wet Cleaning		
Equipment Cost	$27,000	$54,000
Installation Cost	$2,000	$4,000
Total Capital Cost	$29,000	$58,000
Cost Difference from Perc	($26,000)	*($52,000)*
Solvent Cleaning		
Equipment Cost	$60,000	$120,000
Installation Cost	$3,000	$6,000
Total Capital Cost	$63,000	$126,000
Cost Difference from Perc	*$8,000*	*$16,000*

Note: Uses high cost estimates for perc (baseline) and lowest cost estimates for alternative technologies.
Source: Cost estimates provided by AQMD.

High Capital Costs Estimates for Non-Perc Scenario

The high estimate of the potential capital costs, for each size of dry cleaning operation profiled in the firm profile, are presented in Exhibit IIIC-2 below. The incremental, additional capital cost of the alternative technologies for firms purchasing and installing new machines range from $1,000 for a single, wet cleaning machine and installation to additional capital costs of $54,000 for a large firm purchasing and installing two solvent cleaning machines.

Exhibit IIIC-2.
High Estimate Capital Costs for PAR 1421

	Size of Establishment	
Cleaning Technology	***Smallest/Medium 2 or 7 employees (single machine)***	***Large 25 employees (two machines)***
Perc (Baseline)		
Equipment Cost	$35,000	$70,000
Installation Cost	$3,000	$6,000
Total Capital Cost	$38,000	$76,000
Wet Cleaning		
Equipment Cost	$37,000	$74,000
Installation Cost	$2,000	$4,000
Total Capital Cost	$39,000	$78,000
Cost Difference from Perc	*$1,000*	*$2,000*
Solvent Cleaning		
Equipment Cost	$60,000	$120,000
Installation Cost	$5,000	$10,000
Total Capital Cost	$65,000	$130,000
Cost Difference from Perc	*$27,000*	*$54,000*

Note: Uses lowest cost estimates for perc (baseline) and highest cost estimates for alternative technologies.
Source: Cost estimates provided by AQMD.

High Capital Costs Estimates for Non-Perc Scenario

On an annual basis, additional costs incurred by dry cleaning firms adopting new technology in response to PAR 1421 could include the difference between the lease/loan payments and annual operations and maintenance costs associated with the alternative technologies and the lease/loan payments and annual operations and maintenance required for perc cleaning. Wet cleaning and solvent cleaning are also both expected to require additional labor, relative to perc cleaning.

Exhibit IIIC-3 on the following page presents the low estimate annual costs associated with each of the three alternative cleaning technologies, as well as comparable costs associated with perc cleaning. Once again, these estimates provide the low-end estimate of the incremental costs associated with the non-perc scenario. For the smallest firms, the low-end estimates suggest that wet cleaning is actually less expensive than cleaning with perc.

Exhibit IIIC-4 on the following page also presents the high estimate annual costs associated with each of the three alternative cleaning technologies, as well as comparable costs associated with perc cleaning. These estimates provide the upper end estimate of the incremental costs associated with the non-perc scenario.

High and Low Annual Costs for Non-Perc Scenario (cont.)

Exhibit IIIC-3.
Low Estimate Annualized Costs for PAR 1421

	Smallest 2 employees	*Medium 7 employees*	*Large 25 employees*
Perc (Baseline)			
Capital Cost	$55,000	$55,000	$110,000
Loan Term	5	7	7
Interest Rate	15%	10%	7%
Annual Loan Payment	$16,407	$11,297	$20,411
O&M*	$3,115	$8,715	$18,592
Added Labor**	NA	NA	NA
Total Annual Costs	$19,522	$20,012	$39,003
Wet Cleaning			
Capital Cost	$29,000	$29,000	$58,000
Loan Term	5	7	7
Interest Rate	15%	10%	7%
Annual Loan Payment	$8,651	$5,957	$10,762
O&M*	$2,515	$7,315	$15,605
Added Labor**	$3,650	$10,950	$23,360
Total Annual Costs	$14,816	$24,222	$49,727
Cost Difference from Perc	*($4,706)*	*$4,209*	*$10,725*
Solvent Cleaning			
Capital Cost	$63,000	$63,000	$126,000
Loan Term	5	7	7
Interest Rate	15%	10%	7%
Annual Loan Payment	$18,794	$12,941	$23,380
O&M*	$3,160	$7,260	$15,488
Added Labor**	$780	$2,340	$4,992
Total Annual Costs	$22,734	$22,541	$43,860
Cost Difference from Perc	*$3,212*	*$2,528*	*$4,857*

* O&M includes chemicals, detergent and maintenance costs.

** Added labor is relative to perc machine cleaning.

Source: AQMD cost estimates and BBC Research & Consulting.

Exhibit IIIC-4.
High Estimate Annualized Costs for PAR 1421

	Smallest 2 employees	*Medium 7 employees*	*Large 25 employees*
Perc (Baseline)			
Capital Cost	$38,000	$38,000	$76,000
Loan Term	5	7	7
Interest Rate	15%	10%	7%
Annual Loan Payment	$11,336	$7,805	$14,102
O&M*	$2,265	$6,565	$14,005
Added Labor**	NA	NA	NA
Total Annual Costs	$13,601	$14,370	$28,107
Wet Cleaning			
Capital Cost	$39,000	$39,000	$78,000
Loan Term	5	7	7
Interest Rate	15%	10%	7%
Annual Loan Payment	$11,634	$8,011	$14,473
O&M*	$2,715	$7,515	$16,032
Added Labor**	$3,650	$10,950	$23,360
Total Annual Costs	$17,999	$26,476	$53,865
Cost Difference from Perc	*$4,398*	*$12,105*	*$25,758*
Solvent Cleaning			
Capital Cost	$65,000	$65,000	$130,000
Loan Term	5	7	7
Interest Rate	15%	10%	7%
Annual Loan Payment	$19,391	$13,351	$24,122
O&M*	$9,780	$15,180	$32,384
Added Labor**	$780	$2,340	$4,992
Total Annual Costs	$29,951	$30,871	$61,498
Cost Difference from Perc	*$16,350*	*$16,501*	*$33,391*

* O&M includes chemicals, detergent and maintenance costs.

** Added labor is relative to perc machine cleaning.

Source: AQMD cost estimates and BBC Research & Consulting.

Cost Impact Relative to Firm Financial Characteristics—Non-Perc Scenario

The firm profile section of this FBA depicted typical annual financial performance of firms potentially affected by PAR 1421, by size of affected firm. Exhibit IIIC-5 below summarizes the baseline financial performance information provided in that earlier section and combines that information with the annualized cost data for the non-perc scenario presented on the previous pages.

Exhibit IIIC-5.
Range of Estimated Costs for PAR 1421 Non-perc Scenario Relative to Pre-rule Firm Financial Performance

	Size of Establishment					
	Smallest (2 employees)		***Medium (7 employees)***		***Large (25 employees)***	
Pre-Rule 1421 Financial Characteristics						
Average Annual Revenue	$150,000		$450,000		$960,000	
Average Annual Profit Before Taxes	$11,250		$33,750		$48,000	
Impact of Proposed Rule 1421 Costs – Annual Costs Above Perc Baseline						
Wet Cleaning	***Low***	***High***	***Low***	***High***	***Low***	***High***
Estimated Annual Costs	($4,706)	$4,398	$4,209	$12,105	$10,725	$25,758
Costs as Percentage of Revenue	-3.1%	2.9%	0.9%	2.7%	1.1%	2.7%
Costs as Percentage of Profits Before Taxes	-41.8%	39.1%	12.5%	35.9%	22.3%	53.7%
Solvent	***Low***	***High***	***Low***	***High***	***Low***	***High***
Estimated Annual Costs	$3,212	$16,350	$2,528	$16,501	$4,857	$33,391
Costs as Percentage of Revenue	2.1%	10.9%	0.6%	3.7%	0.5%	3.5%
Costs as Percentage of Profits Before Taxes	28.5%	145.3%	7.5%	48.9%	10.1%	69.6%

Source: AQMD cost estimates and BBC Research & Consulting.

Cost Estimates for PAR 1421—Perc Scenario

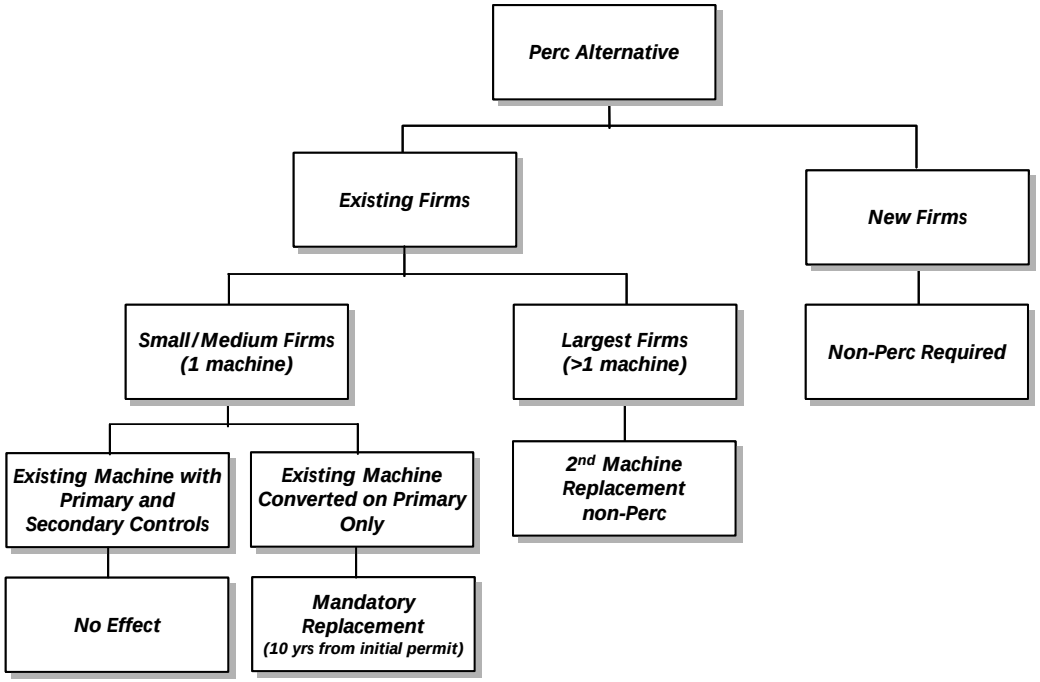
The potential regulatory requirements under the PAR 1421 perc scenario are somewhat more complex than under the non-perc scenario. This scenario assumes the following:

- New dry cleaning machines in the LA Basin would be required to employ alternative technologies to perc.
- Larger dry cleaning operations that add a second machine, or replace an existing second machine, would have to employ an alternative technology to perc for that second machine.
- Existing perc machines employing older technologies (converted machines and those with only primary controls) would have to be replaced within 10 years of their original permitting date. They could be replaced with perc machines. AQMD believes that ten years reflects the typical useful life of existing equipment, though some dry cleaners reportedly continue to use their machines for longer periods of time prior to replacement.

Exhibit IIIC-6 on the following page depicts the potential requirements under the perc scenario for various types of LA Basin dry cleaning firms.

Cost Estimates for PAR 1421—Perc Scenario

Exhibit III-C6.
Proposed Requirements in the Perc Alternative



Source: BBC Research & Consulting from AQMD information.

Cost Estimates for PAR 1421—Perc Scenario Capital Costs

Under the perc scenario, the potential capital cost impacts of PAR 1421 depend on the nature of the firm. From the standpoint of new firms, this scenario is the same as the non-perc scenario, since they are required to employ non-perc technology. Existing firms, with the exception of larger firms with more than one cleaning machine, could replace their existing perc machines with new perc machines at the end of their current machines lifespan. Larger existing firms would have to replace their second machine with non-perc technology.

Exhibit IIIC-7 below applies relevant portions of the capital cost data developed for the non-perc scenario to the anticipated requirements under the perc scenario. Additional capital costs for PAR 1421 are depicted relative to current capital costs for purchasing a new perc machine. The range of costs reflects the low estimate for wet cleaning equipment (on the low end) to the high estimate for solvent cleaning (on the high end). Note that while existing firms with a single machine would not face additional costs when replacing their machines under this scenario, some existing firms using older perc machines (converted or primary control only) might face earlier replacement than otherwise anticipated.

Exhibit IIIC-7.
Capital Costs for PAR 1421 Non-perc Scenario Relative to Status Quo

Type of Firm	*Smallest*	*Medium*	*Large*
New Firms*	($26,000) - $27,000	($26,000) - $27,000	($52,000) - $54,000
Existing Firms			
First Machine**	0	0	0
Second Machine	N/A	N/A	($26,000) - $27,000

* Same as under non-perc scenario.

** While there would be no increase in capital costs for existing firms replacing their first machines under this scenario, firms using older perc machines (converted and Primary control only machines) might have to replace them earlier than otherwise anticipated.

Source:
AQMD Cost Estimates and BBC Research & Consulting.

Cost Estimates for PAR 1421—Perc Scenario Annual Costs

Again drawing from relevant data developed for the non-perc scenario and applying it to the anticipated requirements of the perc scenario, we can estimate the annual financial impacts of this scenario on various types of dry cleaners. Exhibit IIIC-8 below depicts the annualized costs of the perc scenario relative to current conditions. Annual costs for large dry cleaners replacing their second machine are one-half of the corresponding costs for these firms under the non-perc scenario, since only one of their two machines would be required to be replaced with non-perc technology.

Exhibit IIIC-8.
Range of Estimated Annual Costs for PAR 1421 Perc Scenario Relative to Status Quo

Type of Firm	*Smallest*	*Medium*	*Large*
New Firms*	($4,700) - $16,350	$2,500 - $16,500	$4,900 - $33,400
Existing Firms			
First Machine**	0	0	0
Second Machine	N/A	N/A	$2,400 - $16,700

* Same as under non-perc scenario.

** Existing firms currently using converted and primary control only perc machines may incur annual financing costs for a new machine sooner than otherwise anticipated.

Source:
BBC Research & Consulting.

Cost Impact Relative to Firm Financial Characteristics—Perc Scenario

Exhibit IIIC-9 below combines the baseline financial performance information provided in the firm profile section of this case study with the annualized cost estimates associated with the perc scenario.

Exhibit IIIC-9.
Range of Estimated Costs for PAR 1421 Perc Scenario Relative to Pre-rule Firm Financial Performance

	Size of Establishment					
	Smallest (2 employees)		***Medium (7 employees)***		***Large (25 employees)***	
Pre-Rule 1421 Financial Characteristics						
Average Annual Revenue	$150,000		$450,000		$960,000	
Average Annual Profit Before Taxes	$11,250		$33,750		$48,000	
Impact of Proposed Rule 1421 Costs – Annual Costs Above Perc Baseline						
New Firms	***Low***	***High***	***Low***	***High***	***Low***	***High***
Estimated Annual Costs	($4,706)	$16,350	$2,528	$16,501	$4,857	$33,391
Costs as Percentage of Revenue	-3.1%	10.9%	0.6%	3.7%	0.5%	3.5%
Costs as Percentage of Profits Before Taxes	-41.8%	145.3%	7.5%	48.9%	10.1%	69.6%
Existing Firms	***Low***	***High***	***Low***	***High***	***Low***	***High***
Estimated Annual Costs	$0	$0	$0	$0	$2,428	$16,695
Costs as Percentage of Revenue	0.0%	0.0%	0.0%	0.0%	0.3%	1.7%
Costs as Percentage of Profits Before Taxes	0.0%	0.0%	0.0%	0.0%	5.1%	34.8%

Source: AQMD cost estimates and BBC Research & Consulting.

SECTION IIID.
Impact Assessment—PAR 1421

Affordability of PAR 1421

Key affordability issues can include impact on cash flow, impact on profitability and ability to finance pollution control equipment. Dry cleaning firms affected by PAR 1421 compete with other, generally nearby, firms in the LA Basin, and competition with firms outside the geographic reach of the proposed rule is likely negligible. Such conditions might indicate that costs associated with the PAR could eventually be passed on to dry cleaning customers in the form of higher prices. In the near term, however, the timing of affects from the rule on local dry cleaners will vary—depending on when they need to replace their existing cleaning machines. Since firms facing added costs due to PAR 1421 may have competitors who do not face these additional costs until later, the affordability assessment has incorporated the worst case assumption that, at least in the short-run, no cost increases can be passed along to customers by raising prices.

As illustrated in the previous section, the estimated annual costs associated with PAR 1421 vary considerably between the non-perc scenario and the perc scenario. This section first discusses affordability of PAR under the non-perc scenario, it then provides a comparable discussion for the perc scenario.

Impact on Cash Flow

Although impact on cash flow can be a key measure of short-term affordability, this assessment did not develop information on annual depreciation expenses of representative firms, so no estimates of annual cash flow are available. Instead, the affordability assessment focuses on impact on profitability.

Impact on Profitability

Profitability is a key measure of long-term affordability. Profitability rewards business owners and encourages further investment in the facility, which increases productivity over the long-term.

Non-Perc Scenario. Within the non-perc scenario, annual costs vary by technology chosen by the dry cleaner (wet cleaning versus solvent) and by firm size. For the smallest firms (2 paid employees and one machine), converting to wet cleaning appears likely to be more affordable than converting to solvent cleaning. The range of cost estimates developed in the regulatory impact section indicated that annual costs of PAR 1421 for small dry cleaners adopting wet cleaning could range from a cost savings (relative to using perc machines) to an annual cost increase of about $4,400. The latter, highest estimate of potential costs, indicates a maximum potential impact on profits of about 37 percent. By comparison, annual costs of switching to solvent cleaning are estimated to represent at least 28 percent of annual profits (under the low cost end of the range) to as much as 145 percent of profits.

Affordability of PAR 1421 (cont.)

Among medium and large dry cleaners, the cost effectiveness of the two alternative technologies appears fairly comparable. For medium sized dry cleaners (7 employees, single machine), the low-end of the estimated annual costs of converting to either technology is estimated to represent between 7 and 13 percent of annual profits, while the high-end of the estimated annual cost range could represent between 35 and 49 percent of annual profits. For the largest dry cleaners (25 employees, 2 machines), the low-end cost estimate is between 10 and 23 percent of annual profits, while the high-end cost estimate is between 53 and 70 percent of annual profits.

Perc Scenario. Under the perc scenario, effects on dry cleaners vary between new and existing firms and, for existing firms, between small and medium sized firms (with a single machine) versus large firms with two machines. For new firms, the impact on profitability is the same as under the non-perc scenario, since they would be required to purchase and use non-perc based equipment. Small and medium sized existing firms would experience no impact on profitability under this scenario, unless they are required to replace their equipment sooner than would otherwise be anticipated. If this occurs, these firms would essentially experience the loss of the remaining productive life of their existing equipment and face the costs of financing new equipment sooner than in the absence of PAR 1421. The largest existing firms, with more than one machine, would face an intermediate impact on profits since their second machine would have to be replaced with non-perc based equipment. Estimated costs relative to profitability for these large existing firms at the time of replacement range from a low-end cost estimate of about 5 percent of annual profits to a high-end cost estimate of about 35 percent of annual profits.

Ability to Finance

The most important condition for obtaining financing is that cash flow must be sufficient to more than cover debt repayment. When lenders are concerned about annual coverage, they will look more closely at balance sheet conditions, such as how leveraged the firm may already be. In this case study, cash flow information is not available. Annual profits may be looked at as an even more restrictive measure of ability to service debt, since profits are generally less than cash flow.

Non-Perc Scenario. It appears likely that any dry cleaning firm that would be able to finance the eventual replacement of its existing perc equipment would also be able to finance wet cleaning equipment, since the low-end capital cost estimate for such equipment is considerably less than perc equipment, while the upper end estimate is only slightly higher than perc equipment.

The ability of these firms to finance solvent cleaning equipment is more uncertain. The low-end capital cost and annual cost estimates for switching to solvent equipment are relatively close to the costs of buying and using perc machines, but the high-end capital and annual cost estimates are considerably higher than for perc equipment. It appears that the smallest dry cleaning firms might be able to finance solvent equipment if the costs are close to the low-end estimates

Affordability of PAR 1421 (cont.)

developed previously, but would likely be unable to finance solvent equipment if the costs are closer to the high-end estimates. The representative medium and large firm used in this assessment could almost certainly obtain financing for solvent equipment at the low-end of the cost range, and would appear likely to have enough coverage to finance solvent equipment even at the upper end of the cost range. It is possible, however, that some actual medium and large dry cleaning firms that are less profitable than the representative firms described in this assessment would have difficulty financing solvent equipment if the costs are close to the high-end estimates.

Perc Scenario. For new firms, the perc scenario would pose the same situation with regard to obtaining financing as the non-perc scenario. For existing firms, the primary affect of the perc scenario would be on larger operations, with multiple cleaning machines. These operations would face about one-half of the added capital costs they could face under the non-perc scenario, since only one of their two machines would be required to be replaced with non-perc technology. It is likely that these larger entities are in a relatively strong position to obtain financing, compared with the predominantly smaller dry cleaning operations throughout the LA Basin.

Competitiveness Impacts of PAR 1421

Typically, the principal competitiveness concern for new regulations is whether the costs or changes mandated by the requirements will affect the ability of local firms to compete with competitors outside the regulated region. Localized competitiveness issues can include differential impacts among firms within the regulatory area.

Regional Competitiveness

As described in the first section of this case study, the dry cleaning industry provides a highly localized service, with the market area of an individual establishment typically on the order of one to two miles from customers' homes or businesses. As such, it is unlikely that PAR 1421 would have impacts on regional market share (the proportion of demand within the region serviced by firms located within the region) for this industry.

Competitive Effects Within the LA Basin

The total volume of dry cleaning business within the LA Basin is not likely to be greatly affected by PAR 1421 under either the non-perc scenario or the perc scenario. As noted earlier in this section, in the long-run the costs associated with PAR 1421 may eventually be passed on to dry cleaning customers in the form of higher prices. The size of this price increase can be evaluated by considering the annual costs of the regulation relative to the annual revenues of affected firms. This PAR could have greater impacts, however, on the relative competitiveness of individual firms within the LA Basin.

Non-Perc Scenario. Data from the firm profile and regulatory impact assessment indicate that the annual costs are generally less than four percent of dry cleaners' annual revenues for any firm size and either of the two alternative technologies, except in the case of the high-end cost estimate for any small establishments adopting solvent technology. Further, the affordability assessment suggested that if the costs of this technology approach the high-end estimate, it is unlikely that converting to solvent cleaning would be affordable for the typical small firm. Though it may seem as if adopting wet cleaning is an obvious solution for firms in this situation, many dry cleaners, along with some of their customers, are unconvinced that the technology of wet cleaning is sufficient.

Within the LA Basin, the non-perc scenario (as well as the perc scenario) would have differential effects on competitiveness of local dry cleaners. Firms would vary in terms of when they would experience potential cost increases from the rule, depending on the age, condition and remaining life of their existing perc equipment. Both industry and market acceptance of the alternative cleaning technologies, relative to perc cleaning, may take some time to develop. While the total volume of dry cleaning within the Basin may not be greatly affected, some firms could potentially gain local market share and others (facing early conversion to different equipment and the associated costs) lose local market share, at least for several years until the stock of existing perc machines is used up.

Competitiveness Impacts of PAR 1421 (cont.)

Perc Scenario. The primary localized competitiveness effect of the perc scenario would result from the requirement that new firms adopt non-perc technology, while most existing firms could both continue to use their current perc machines and eventually replace those machines with new perc machines. The potential added costs and market acceptance issues associated with non-perc technology could present a barrier to the entry of new firms. This, in turn, might benefit existing firms, particularly in light of comments by the PAR 1421 workgroup that too many new firms are currently entering the business from the standpoint of the industry's financial health and profitability.

If a mandatory replacement date is established under this scenario, however, some firms may have to replace their existing perc equipment sooner than otherwise anticipated. This could have the greatest impact on the least profitable existing firms, which may be the most likely to try and extend the life of current equipment as long as possible prior to financing new machinery.

Impacts on Small and Disadvantaged Businesses

Small Businesses

Most dry cleaning establishments and firms are small businesses by essentially any definition. County Business Patterns data indicate that the average dry cleaner in the LA Basin has five employees. Dry cleaning business owners and trade association representatives participating in the PAR 1421 workgroup indicated that the most common establishment size is even smaller, with only two paid employees. The largest operation described by the workgroup had 25 employees, while the group indicated that this probably represented less than two-dozen establishments in the entire LA Basin.

Non-perc scenario. The smallest, two employee, operations may be most affected under this scenario. The affordability assessment indicated these establishments may be driven toward wet cleaning. Assuming wet cleaning is adopted by these small firms, however, the scale of the annualized costs they face for wet cleaning, relative to their annual revenues and profits, is not much different than medium and large firms adopting either wet cleaning or solvent technologies.

Perc scenario. For existing dry cleaners, the requirements of the perc rule have less effect on the small and medium size establishments (with a single machine) than on the relatively large establishments (with two machines). If a mandatory replacement date is established under this scenario, however, some firms may have to replace their existing perc equipment sooner than otherwise anticipated. This could have the greatest impact on firms that face difficulty in purchasing new equipment—potentially those with the lowest profits and most difficulty in obtaining credit. It is probably reasonable to anticipate that such firms may be disproportionately found among the smallest firms.

Disadvantaged Businesses

Secondary data sources cannot produce reliable estimates of the number or proportion of dry cleaning firms in the LA Basin that are minority owned. Dunn & Bradstreet data for this industry is unreliable since the sample is small and not representative of the Basin as a whole, and Economic Census data does not reach the specific industry level of the dry cleaning industry.

Trade associations, however, indicate that a very large proportion of the dry cleaning firms in the LA Basin are minority owned. The Korean Dry Cleaners of Los Angeles (KDLA) may, by itself, include more than one-half of all local dry cleaning firms.

Cumulative Impacts

The dry cleaning industry has been previously regulated by AQMD. Both perc and non-perc machines have fallen under previous AQMD regulations.

Cumulative Impacts

Rule 1102, adopted in 1978, regulated non-perc dry cleaning machines in an effort to reduce the release of VOCs by eliminating the use of dip tanks and drying cabinets and limiting the use of and exposure to the atmosphere of transfer machines. It also required best practice measures for control of VOCs.

Dry cleaners installing a new machine (excluding replacement) are required to use best available control technologies for toxics and/or limit the amount of perc they use under the Rule 1401–New Source Review for Toxic Air Contaminants. This rule primarily affects new dry cleaners that expand operations or shops that have allowed their AQMD permits to lapse — approximately 300 dry cleaners have been subject to this rule.

Perhaps more significantly for most of the facilities that would be affected by PAR 1421, Rule 1421 (adopted in 1994 and amended in 1997) was developed to align AQMD regulations with new, statewide regulations regarding perc dry cleaning machines. Rule 1421, with compliance beginning in 1994, required dry cleaners using perc transfer machines to invest in converting them to closed-loop systems.

It is possible that some LA Basin dry cleaners that had to divert a portion of their profits in the mid and late 1990s to pay for investment in new hardware or equipment to comply with the 1421 ATCM Amendment will again be facing added costs as a result of PAR 1421.