

APPENDIX D

Socioeconomic Analysis For Draft Amendments to Rule 4308

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SOCIOECONOMIC ANALYSIS FOR DRAFT RULE 4308

I. Introduction

Pursuant to California Health and Safety Code (CH&SC) Section 40728.5 as well as the District's *2011 Economic Analysis Process Recommendations*,¹ the District conducts a socioeconomic analysis of a proposed rule or rule amendment that will significantly affect air quality or emission limitations prior to rule adoption. A socioeconomic analysis examines how a rule project may impact the San Joaquin Valley's (Valley's) industries and businesses, employment rates, and economy.

This rule amendment project would achieve emission reductions by lowering the NOx emission limit for natural gas-fired instantaneous water heaters with a rated heat input of 0.075-0.4 MMBtu/hr (instantaneous units) from 55 ppmv to 20 ppmv. As a point-of-sale rule, this draft rule amendment would mandate that any instantaneous units supplied, sold, or installed in the Valley meet a 20 ppmv NOx emission limit effective on and after January 1, 2015.

The CH&SC requires discussion of the necessity of adopting, amending, or repealing a rule to attain state and federal ambient air quality standards; this requirement is met through the discussion in the body of the draft staff report. The other five CH&SC requirements for a socioeconomic analysis are satisfied through this appendix, which examines the following items:

- Type of industries or businesses affected by the rule (Section II of this appendix)
- Range of probable costs for the rule (Section IV of this appendix)
- Emission reduction potential of the rule (Section IV of this appendix)
- Availability and cost effectiveness of alternatives to the rule (Section V of this appendix)
- How the rule impacts the Valley's employment and economy (Section VI of this appendix)

The District also evaluated two additional items in this socioeconomic analysis, per the District's *2011 Economic Analysis Process Recommendations*:

- Costs and socioeconomic impacts from previous versions of a rule (Section III of this appendix)
- Impacts to small businesses, municipalities, and at-risk communities (Section VII of this appendix)

¹ San Joaquin Valley Air Pollution Control District [SJVAPCD]. (2011, October 20). *Enhancements to District Economic Analysis of Regulations*. Fresno, CA. Retrieved from http://www.valleyair.org/Board_meetings/GB/agenda_minutes/Agenda/2011/October/GB_Agenda_Item_13_Oct_20_2011.pdf

II. Affected Industries and Businesses

Instantaneous units are utilized in a variety of settings, including, but not limited to, the following areas:

- Apartment buildings
- Large homes
- Small businesses
- Commercial/office buildings
- Small manufacturing facilities
- Government facilities
- Hotels
- Restaurants
- Hospitals
- Educational Institutions
- Religious Organizations

End-users of instantaneous units are affected by the draft rule amendments, as they would not be allowed to purchase 55 ppmv compliant instantaneous units and could potentially pay more for a 20 ppmv compliant instantaneous unit. The incremental cost for purchasing a 20 ppmv compliant unit instead of a 55 ppmv compliant unit is minimal or nonexistent for certain instantaneous water heaters brands.

Manufacturers of instantaneous units would be affected by the draft rule amendments, but there are currently no instantaneous water heater manufacturers in the Valley. There are Valley wholesalers, suppliers, and contractors who purchase instantaneous units from manufacturers to sell in the Valley that would be affected by the draft rule amendments. These businesses would no longer be allowed to sell, distribute, or install instantaneous units meeting a NO_x emission limit of 55 ppmv.

III. Costs and Socioeconomic Impacts from Previous Versions of Rule 4308

Rule 4308 was adopted in October 2005 and subsequently amended in December 2009. These 2013 draft amendments represent the third generation of this rule. In order to account for the cumulative impact of multiple generations of rules on this source category, the *2011 Economic Analysis Process Recommendations* advises that staff reports include descriptions and cost estimates for previous generations of air pollution controls and reference previous socioeconomic analyses as each rule is amended.

Previous staff reports for Rule 4308 did not specifically address cost estimates for instantaneous units; as such, there is no previous cost data to compare to the cost estimates for this draft staff report. Previous socioeconomic analyses concluded that there were no significant economic or employment impacts associated with the adoption

SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT

or amendment of Rule 4308 since it is a point-of-sale rule and did not require forced replacement of units.

IV. Costs and Emission Reduction Potential from Draft Rule 4308

Compliance costs for this draft rule amendment consist of the price differential between 20 ppmv and 55 ppmv compliant instantaneous units. There are no additional engineering costs, labor costs, or costs from new safety requirements resulting from this draft rule amendment. Installation costs are not expected to vary for 20 ppmv and 55 ppmv compliant units. Table D-1 below presents the compliance costs for 55 ppmv compliant instantaneous units versus 20 ppmv compliant instantaneous units, as examined in Appendix C (Cost Effectiveness Analysis).

Table D-1: Compliance Costs for 55 ppmv Compliant Units vs. 20 ppmv Compliant Units

Unit Size (MMBtu/hr)	20 ppmv Compliant Unit Cost	55 ppmv Compliant Unit Cost	Price Differential Between 20 ppmv and 55 ppmv Compliant Units
Low-End Estimates			
0.12 to 0.16	\$549.00	\$546.00	\$3.00
0.161 to 0.20	\$744.00	\$559.00	\$185.00
High-End Estimates			
0.12 to 0.16	\$1,554.00	\$1,065.00	\$489.00
0.161 to 0.20	\$2,234.00	\$2,279.00	-\$45.00

The price differentials listed in Table D-1 would be distributed over the 20 year lifetime of the unit.² Assuming the most conservative price differential for the low-end estimates (\$185) and high-end estimates (\$489), the average annual cost of a 20 ppmv compliant instantaneous unit would be \$21.65-\$57.21 per year (see Appendix C).

As discussed in Appendix B (Emission Reduction Analysis), the draft amendments to Rule 4308 are expected to result in 0.002 tons per day (tpd), or 0.73 tons per year (tpy), of NOx emission reductions. These emission reductions will occur over a 20 year period as instantaneous units are replaced. This represents a 66.4% reduction from the estimated 1.10 tpy of NOx emissions from instantaneous units.

² Department of Energy [DOE]: Tankless or Demand-Type Water Heaters. (2012). Retrieved June 11, 2013 from <http://energy.gov/energysaver/articles/tankless-or-demand-type-water-heaters>

V. Alternatives to Draft Rule Amendment

Given the extent of the Valley's attainment challenges, the District evaluates all potential opportunities to reduce emissions during the attainment planning process, and commits to pursue all reasonable emission reduction opportunities identified during this planning process. Because this amendment to Rule 4308 was identified as a reasonable opportunity to reduce emissions during the development of the *2012 PM2.5 Plan*, there is no alternative to pursuing these reductions.

The draft NOx emission limit is considered the lowest achievable NOx emission limit in practice. Although the District confirmed that the NOx emission limit is achievable and has been put into practice in other air districts, the rule does not specify how manufacturers are to achieve this limit. As such, there are no technological alternatives to compare for this draft rule amendment, so evaluation of the cost effectiveness of alternatives is not applicable to this rule project.

VI. Socioeconomic Impacts

A socioeconomic impact is any effect to the Valley's employment or economy due to a regulatory action. There are no socioeconomic impacts anticipated for the draft rule amendments because there are no significant impacts to the following three groups that could potentially be affected by this rule-amending project:

- The end-users of instantaneous units;
- Manufacturers of instantaneous units; and
- Wholesalers, suppliers, and/or contractors who supply or install instantaneous units.

End-Users

Rule 4308 does not require end-users to replace existing instantaneous units within a certain time frame; rather, as instantaneous units meeting the 55 ppmv NOx emission limit reach the end of their life and the users replace them, they will purchase a unit that meets a 20 ppmv NOx emission limit, thus ensuring that end-users are not forced to incur additional costs when their current units are still operable. Also, the price differential between 20 ppmv and 55 ppmv compliant units is minimal in terms of the overall cost of the unit, and some 20 ppmv compliant units are identical in price to their 55 ppmv counterparts. The price range for instantaneous units is more closely related to the fuel efficiency, energy efficiency, or luxury features (such as stainless steel build and touch screen capabilities) of an instantaneous unit, rather than the low-NOx capability of the unit.

The District anticipates that owners of tank-style water heaters will continue the trend of replacing their current water heaters with instantaneous (tankless) water heaters because of the increased fuel, water, and energy efficiencies of instantaneous units.

SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT

For those owners switching from tank-style to instantaneous units, any potential price differential between a 55 ppmv compliant instantaneous unit and a 20 ppmv compliant instantaneous unit will be largely offset by fuel and energy savings.

Manufacturers

There are six instantaneous water heater manufacturers identified by the South Coast Air Quality Management District (SCAQMD) in their *List of Certified Units Pursuant to Rule 1146.2*. These manufacturers build instantaneous units and sell them to wholesalers, suppliers, or contractors for distribution to the end-users.

As a result of the draft rule amendments, manufacturers would no longer be able to sell 55 ppmv compliant instantaneous units to Valley retailers or contractors. However, all of the manufacturers identified who produce 55 ppmv compliant instantaneous units also produce the 20 ppmv compliant units. Five of the six manufacturers produce 55 ppmv and 20 ppmv compliant instantaneous units, while one of the manufacturers no longer produces 55 ppmv compliant units and now only produces 20 ppmv compliant instantaneous units. The draft rule amendments would have a minimal impact to instantaneous unit manufacturers.

District staff also verified that none of the six instantaneous water heater manufacturers have facilities located in the Valley.

Wholesalers, Suppliers, and/or Contractors

Wholesalers, suppliers, and contractors are the medium between the manufacturing facilities and the end-users, as these parties purchase units from the manufacturers to sell and distribute to users. These businesses would no longer be allowed to sell, distribute, or install instantaneous units meeting a NOx emission limit of 55 ppmv. However, the availability and number of instantaneous units meeting a NOx emission limit of 20 ppmv has grown substantially within the last few years. Each of the six instantaneous water heater manufacturers are already producing several models in various sizes within the 0.075 to 0.4 MMBtu/hr rated heat input size range that meet a 20 ppmv NOx emission limit and are currently selling these units in the Valley.

Also, as discussed in Appendix C (Cost Effectiveness Analysis), the price differential between a 55 ppmv and 20 ppmv compliant instantaneous unit is minimal, ranging from \$3.00 to \$185.00 for the low-end cost estimates to a cost savings of \$45.00 to an increased cost of \$489.00 for the high-end cost estimates. Contractors, suppliers, and wholesalers sales volumes would not be adversely impacted. Profit margins would remain the same as the cost would be passed onto the consumer.

Since the compliance deadline for 20 ppmv compliant instantaneous units would become effective on January 1, 2015, wholesalers, suppliers, and contractors would have sufficient time to sell any remaining 55 ppmv compliant units in stock.

VII. Impacts to Small Businesses, Municipalities, and At-Risk Communities

Per the *2011 Economic Analysis Process Recommendations* document, District staff is advised to evaluate how new rules or rule amendments may impact small businesses, municipalities, and at-risk communities where the major employer may respond to additional compliance costs by laying off workers. As discussed in Section VI above, the draft rule amendments are not expected to result in any significant economic impacts, nor any decreased employment for small businesses and industries in the Valley. As such, municipalities and at-risk communities are not expected to incur any economic or employment effects from these draft rule amendments.