



June 25, 2012

The Value of Air Quality Regulation to Las Vegas Homeowners

Constant Tra

The Las Vegas Valley was one of the fastest-growing urban areas in the United States in 2006. The region nearly doubled its population between 1996 and 2006. This record population growth led to a significant increase in ozone air pollution in the valley. Following the requirements of the 1990 Clean Air Act Amendments (CAAA), the U.S. Environmental Protection Agency (EPA) designated the Las Vegas Valley as a nonattainment area for ozone in 2004. The area has had difficulty achieving attainment since 2004. In 2005, the number of violations of the national standard for ozone concentration during an 8-hour period reached a record high of 27 (see Table 1). Research has shown that repeated exposure to ozone air pollution can have adverse health effects on young children and senior citizens, including breathing difficulties, increased susceptibility to respiratory illnesses, and permanent lung damage.¹ Hence, regulatory efforts aimed at bringing the Las Vegas area within compliance of the national ozone standards will likely provide benefits to Las Vegas residents.

Table 1: High Ozone 8-hour Days in the Las Vegas Metropolitan Area (2003-2010)

	2003	2004	2005	2006	2007	2008	2009	2010
High Days	10	4	27	25	17	9	3	1
Peak Value (parts per billion)	88 ppb	79 ppb	105 ppb	94 ppb	90 ppb	83 ppb	81 ppb	82 ppb

Source: Clark County Department of Air Quality and Environmental Management.

http://ccaqapps5m.co.clark.nv.us/cgi-bin/ozone_summary.pl

A recent research article by Tra (2012) estimates the benefits, to homeowners in 2006, of bringing the Las Vegas area within full compliance of the daily national standard for ozone.² The study proposes an empirical framework for evaluating the benefits of air quality regulations in small urban jurisdictions, such as counties or cities, where air quality regulatory programs are actually implemented. Benefit estimation is a necessary tool for the evaluation of environmental regulations. However, current estimates of the benefits of air quality regulation are only available for large regions, such as Los Angeles.

Table 2 reports the economic benefits of meeting the 2008 daily national ozone standard across the incorporated cities of the Las Vegas Metropolitan area. The study finds that Las Vegas homeowners do value air quality regulation. The study estimates that the average homeowner in the Las Vegas Valley places a value of \$1,644, in 2006, on bringing his/her neighborhood air quality up to the national standard. Also the results show substantial variation in economic benefits across the Las Vegas Valley. The average economic benefit in the city of Las Vegas, the largest incorporated area is

¹ Source: <http://www.epa.gov/groundlevelozone/health.html>.

² Tra, Constant. "Measuring the General Equilibrium Benefits of Air Quality Regulation in Small Urban Areas." *Land Economics*, forthcoming. Also available at: <http://papers.ssrn.com/abstract=2047211>.

\$1,656. In contrast, in the city of North Las Vegas, the incorporated area with the lowest average income and the highest average ozone air pollution, the mean benefit is \$1,020. The largest average benefit is found in Henderson, the city with the highest average income in the Las Vegas Metropolitan area.

Given the push to raise environmental standards on pollutants such as ground-level ozone and the economic problems caused by a prolonged recession, there is a need for more information on the benefits of regulation in small metropolitan areas, such as Las Vegas, which are often overlooked in empirical studies. This study suggests that the regulation of ground-level ozone does yield substantial benefits to households even in a small urban setting, such as the Las Vegas Valley.

Table 2: Economic Benefits across Incorporated Areas (\$/year)

	Mean household income in 2006	Ozone average daily maximum level in 2006	Mean benefits for achieving the ozone daily standard (0.075 ppm)
Las Vegas Valley	\$122,000	0.083 ppm	\$1,644
Henderson, City	\$136,000	0.080 ppm	\$2,124
Boulder City	\$135,000	0.079 ppm	\$1,752
Las Vegas, City	\$123,000	0.084 ppm	\$1,656
North Las Vegas, City	\$100,000	0.085 ppm	\$1,020

This table shows the economic benefit, to local homeowners, of bringing the 2006 ozone air pollution levels in the Las Vegas metropolitan area within compliance of the 2008 daily national ozone standard. All values are in 2006 constant dollars.

Constant Tra, Ph.D.
Associate Director, Center for Business and Economic Research
University of Nevada, Las Vegas