

How Does Transit Impact Water?

Water availability has become an increasingly pressing issue in San Diego, and throughout most of Southern California. This fact is echoed in the response that many local municipalities have taken to increase water conservation. For example, the City of San Diego, the leading retail water agency in the County of San Diego, implemented mandatory conservation measures on June 1, 2009 when they declared a Level 2 drought alert. Following this declaration, the majority of water agencies within San Diego County began to implement various water conservation measures.¹ Water conservation has two major components: availability and consumption, meaning that municipalities can choose to increase availability, and/or reduce consumption in order to increase future water security. Water conservation measures, such as those taken by local municipalities, generally aim at reducing water consumption by limiting and restricting highly consumptive activities. In contrast, proposed projects such as the Carlsbad Desalination Project attempt to increase water supply in the region. This proposed desalination project proposes to produce 50 million gallons of drinking water per day, at an estimated cost of approximately \$2 billion for construction of the facility alone.² While increasing water supply is one way to increase water availability in the region, as exemplified in the Carlsbad Desalination Project, it can come at an extremely high price to taxpayers and the environment.

As mentioned previously, water conservation measures generally aim at reducing consumption by activities that use large amounts of water. In the San Diego region, municipalities generally target irrigation activities to reduce water consumption. Although such conservation measures can be effective, they do not address the whole issue. **Development patterns have a drastic impact on water conservation in terms of water consumption and water supply.** Studies demonstrate that per capita water consumption is generally greater in low-density development compared to high density development, because low-density development is correlated with larger lot sizes and therefore necessitates more outdoor water use.³ In addition, increasing the impermeability of a surface by paving or compacting soils for development alters the hydrologic cycle and prevents water infiltration into the ground, thereby decreasing future groundwater supplies.⁴ Infill development and transit infrastructure, which generally require building within already developed areas, do not generate additional impermeable surfaces. Therefore, by increasing infill development and corresponding transit infrastructure, communities can decrease water demand by providing a lower demand for outdoor water

¹ <http://www3.signonsandiego.com/stories/2009/aug/28/1n28water002319-use-water-dropping-double-digits/>

² <http://www.sdn.com/sandiego/2009-06-07/special-sections/water/desalination-has-major-role-in-san-diego-water-plans#ixzz0YUC7EoOy>

³ <http://www.westernresourceadvocates.org/media/pdf/SWChapter4.pdf>

⁴ <http://www.epa.gov/ednrmrl/publications/reports/epa600r00016/epa600r00016.pdf>

use and increase water supply by reducing the amount of impermeable surfaces that would otherwise threaten future water supply.

Transit also improves water quality by reducing traffic and corresponding automobile emissions, which have been shown to directly cause water pollution. The same automobile-generated chemicals that cause air pollution also cause water pollution, because these chemicals can enter water bodies when it rains and pollutants precipitate from the atmosphere and back onto the ground. In addition, harmful chemicals such as polycyclic aromatic hydrocarbons (PAHs) are released from cars in the form of automobile soot, asphalt, motor oil, tires, and exhaust emissions, and have been found in heavy concentrations in water bodies near congested highways.⁵ Transit directly reduces vehicle miles traveled (VMT), thereby reducing the release of PAHs and other chemicals from cars, as well as reducing airborne emissions that have the potential to pollute water bodies.

Help improve water supply and water quality in San Diego, get involved in the Urban Area Transit Strategy!!!

⁵ American Chemical Society (2000, September 29). Pollution From Urban Sprawl Threatens Aquatic Life In Major U.S. Cities. *ScienceDaily*. Available at: <http://www.sciencedaily.com/releases/2000/09/000929073033.htm>