

“COMPLETE STREETS” of AVONDALE



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Cities and states
throughout the nation are



adopting plans for complete streets in order to reduce people's dependency on automobiles and to mitigate problems of traffic congestion. The idea behind complete streets is that they are designed for everyone's mobility, health, and safety as opposed to streets that are only safe for people driving their cars. Complete Streets encourage the usage of non-motorized forms of transportation and also public transportation—quite simply, the streets make it easy for people to cross the street, walk to shops, and bike to work. People of all ages and abilities can use these streets in a safe and efficient manner. Because of this, complete streets create a sense of place. In other words, people feel like they belong to the area, they build a sense of connection with the community, and they're more inclined to protect their community and give back. The creation of a sense of place is directly in line with the city of Avondale's vision, which is about community engagement.

Avondale's plans

Avondale currently has plans to transform one of its main arterial roads into a "complete street." Central Avenue, between Van Buren and Western, is the optimal candidate for this kind of project, as it is one of the most "mixed-use" streets in the city. The street has numerous schools, churches, businesses, and residences, and, in turn, has a relatively high number of vulnerable road users (such as pedestrians and cyclists). Further, many of these users are children that travel to and from school in the mornings and afternoons. For these reasons, Avondale has decided to invest in increasing the accessibility and the safety of Central Avenue for all of its users.

The project started in 2009 as a simple mill-and-overlay project, but has since evolved into a more comprehensive renovation. Using funding from the city as well as grants from the Federal Highway Administration's "Congestion Mitigation and Air Quality" improvement program (CMAQ), Avondale is planning to remove and replace the asphalt on Central Avenue. The city has decided to take full advantage of the extensive construction process to implement various strategies to improve the safety, accessibility, and aesthetic of the street. The plan consists of a road diet - that is, reducing the number of lanes on the road from five to three, with one lane for traffic in

each direction and one center turn lane. The space created by removing these lanes will be utilized to augment the pedestrian and bicyclist infrastructure. Each side of the street will have a bike lane and a sidewalk, separated from the main roadway by a six-foot landscaped buffer. These buffers will be designed to improve the safety for people using non-vehicular modes of transit. The buffers will also incorporate low-impact development and desert-adapted landscape in their design, which is a sustainable way of increasing the overall aesthetic and appeal of the area.

Avondale's vision

The environmental, economic, and social benefits that come with complete streets are foundationally aligned with the city of Avondale's vision, goals, and values. Complete streets are a major initiative of Avondale's 2014 Municipal Sustainability Plan to improve in the areas of transportation, land use, health and well-being, ecosystems, water, and air quality. The benefits of complete streets will also contribute to many of the goals that Avondale has established in its 2030 General Plan, such as to improve walkability, livability, bike-friendliness, neighborhood greenery, quality of life, and economic sustainability. Avondale's vision - "A city of variety, vitality, and values, whose citizens pursue an active role in molding a great place to live, work, and play, in a manner respectful of the city's rich history, growing culture, and invaluable natural resources" - will be achieved in part through the building of the Central Avenue complete street. This is because the complete street will encourage interaction, connectivity, sustainability, and community well-being.

Environmental benefits

Improved Air Quality

Poor air quality is related to higher rates of asthma, other respiratory illnesses, and chronic diseases. Complete streets encourage an increased usage of alternative modes of transportation, which improves air quality by decreasing automobile dependency and reducing CO₂ emissions. This is especially important as vehicular transportation accounts for about 1/3 of all greenhouse gas emissions. Switching to

walking or biking for short trips on a regular basis can reduce CO₂ emissions by over 20 million tons a year. The National Complete Streets Coalition states that, "...if each resident of an American community of 100,000 replaced one car trip with one bike trip just once a month, it would cut carbon dioxide (CO₂) emissions by 3,764 tons of per year in the community. Complete streets allow this to happen more easily." Furthermore, air quality compliance and meeting emissions standards is an integral part of the Maricopa Association of Governments' Regional Transportation Plan.

Improved water quality

The elements of street design, construction, operation, and maintenance can do more than create a complete street, which promotes safe travel and access for all users, it can also be a green street, which improves environmental sustainability. Green streets employ an environmentally sustainable technology called green infrastructure. Green infrastructure is designed to mimic Earth's natural water filtration systems through permeable surfaces, rain gardens, downspout disconnections, rainwater harvesting, planter boxes, bioswales, and more. Streets can be built to reduce the amount of water used on irrigation, to reduce stormwater runoff, to prevent stormwater from collecting pollutants, to harvest rainwater, and to filter stormwater directly at the source. Green streets also provide shade, reduce the urban heat island effect, and reduce the production of greenhouse gases. There are a number of techniques that can be employed to integrate green infrastructure into complete street planning, design, and/or maintenance in order to make a complete street simultaneously a green street. These best practices can be reviewed in detail in the Maricopa Association of Governments Complete Streets Guide.

Economic benefits

The economic benefits of complete streets are significant and will play a large role in the overall revitalization of Central Avenue. The economic prosperity will come in many forms throughout different stages of the process, to residents, businesses, and the city itself. Some forms of vitality may be distinct, others indirect and subdued; despite its variance, there are always economic impacts resulting from complete street projects.

Residential level

Complete streets have an economic impact on its surrounding residential neighborhoods. This is largely in the form of an increase in property values, which is also correlated with a rise in private investment around the project area. (Although rising property values positively affect many stakeholders, policy measures may need to be enacted to address any potential negative implications, such as rising rent or property taxes to residents). Complete streets also provide savings from averted collision costs as these streets are designed to minimize the risk of an accident occurring for all users. The costs that are associated with property damage and emergency health care are thus prevented. According to Smart Growth America's National Complete Streets Coalition, these costs, which are typically placed on the victims of the collision, range from approximately \$6,755 to \$193,000 for a single crash. Over the years, a complete street design can result in not only saving people's lives and preventing serious injuries, but also saving individuals hundreds of thousands of dollars in collision costs.

Business level

The economic benefits of complete streets extends to the commercial sector as well. One of the strongest economic correlations is with the increases in revenue. The rise in revenue, most commonly seen in retail sales, indicates a significant positive impact on the success of street-side businesses (New York DOT, 2013). Local businesses are also often the recipients of these benefits. The success of small business owners is important to the local economy as local retailers reinvest four times as much of their profit in the surrounding area as national chains (Mitchell, 2012). These benefits can be attributed to the increase in multimodal transportation, including foot traffic, as well as improved city connectivity. In addition, complete streets have been associated with the development of *new* businesses in the area, as well as the augmentation of employment levels in the area.

Municipal level

The municipal sector can also gain economic benefits from complete streets. Complete street projects generally cost less than conventional projects to urban roads.

Avondale's project on Central Avenue falls just below the average cost of \$3.58 million per mile, and well below the average expense of \$12.75 million per mile in high-cost arterial projects (National Complete Streets Coalition, 2015). Complete street projects that are as costly or more costly than the average conventional expense typically incorporate environmentally friendly aspects that go beyond transportation usage, such as infrastructural improvements to stormwater management. Extra expenses may also be due to the establishment of connectivity networks for bicyclists. The sustainable systems that complete streets cultivate provide an overall return on investment to the city in a myriad of ways. Although the cost benefits are not always clear, direct, or immediate, the consequences of a project such as those mentioned above are eventually profitable to the city and its residents. Savings can also take place when the city no longer has to make retrofits to the street in order to meet the needs of those who do not travel in private automobiles (Maricopa County Association of Governments, 2011).

Social Benefits

There would be no need for a complete street without a society to place it in. Therefore, discussing the societal benefits of a complete street system is absolutely mandatory. When it comes to the benefits these streets provide to the people in their communities, the scope is limitless. The aforementioned economic and environmental benefits contribute significantly to a more enriched society. Each citizen will become more connected, the sense of community will be strengthened, and there will be a greater presence of economic opportunity. Furthermore, the public health benefits are also exceedingly promising. Improvements to public health will span across the spectrum of physical and mental health.

There is a direct link between urban structure (or the built environment) and a person's risk for obesity. As pedestrian connections increase due to the implementation of mixed-use development, a noticeable decrease in a person's risk of obesity takes place (Frank et al., 2004). The inverse is also true, a person's risk of obesity increases as much as 6% for every hour spent in a car per day (Frank et al., 2004). By providing infrastructure that caters to a variety of transportation modes, cities are able to help

combat the obesity epidemic. The increase in physical activity that is offered by complete streets also positively affects mental health. If 15% of land-use space is devoted to active transportation, the burden of depression and dementia can be reduced by 7% (Maizlish et al., 2011).

The reduction in air pollution that is afforded by complete streets also proves valuable to human health. Particulate air pollution, which is attributed to motor vehicle transportation, has been linked to illnesses such as heart disease, asthma, decreased lung function, and premature death (EPA, 2015). By integrating active transportation that doesn't rely on internal combustion and the release of greenhouse gases, the city will be able to reduce the prevalence of all of these crippling health problems.

Complete streets also improve community connectivity. They allow local schools to start bike caravans for the students, which teaches them to be better cyclists and pedestrians while simultaneously allowing them to be social and physically active. They also connect citizens to more economic opportunities, as the access to jobs and local shops increases as multimodal transportation increases (California DoPH, 2012). The combination of an improved local economy, increased opportunities for community involvement, and an overall increase in health benefits and the quality of life make complete streets the absolute ideal for any community in the world.

Methods for evaluating performance

It is clear that implementing complete streets policies can significantly improve the appeal, accessibility, safety, economy, and health of a community. However, it is often difficult to view these benefits in a way that can be clearly expressed to the various stakeholders involved. Determining a strategic process to adequately convey not only the tangible outputs of the project, but also the *intangible* outcomes can help stimulate the development of future projects.

The National Complete Streets Coalition, a nonprofit organization of Smart Growth America, has published a document on this strategic process for the public to

use. The report, *Evaluating Complete Streets Projects: a guide for practitioners*, provides specific performance measures to properly assess individual projects, focusing on six overarching goals: access, economy, environment, place, safety, and health & equity. First, it is important to begin the process with a set of realistic and measurable goals. However, these goals should not place too much weight on monetary gains, as this can often overcomplicate the issue and result in less-than-equitable outcomes. Returns on investment can be useful, especially when conveyed to city leaders, but residents are more likely to respond to the more intangible outcomes of the project. Balancing the goals in regard to financial, environmental, and social responsibilities is the best way to get a more complete picture of the project's influence. The aforementioned report provides a more comprehensive overview of how to form these goals, measure success, and communicate the results, as well as how this process has been conducted by municipalities across the country.

One of the challenges of evaluating complete streets projects is the lack of data on pedestrian and bicyclist activity. The National Complete Streets Coalition recommends that cities gather baseline data a year before beginning construction in order to optimally compare post-project measures with previous activity. Although the project on Central Avenue is not able to meet those recommendations, Avondale should consider implementing a regular pedestrian/cyclist count to assist future analyses. The National Bicycle and Pedestrian Documentation Project (NBPD) provides municipalities with a model for collecting consistent and accurate data for the use of future transportation decision-making. Companies such as Eco-Counter offers products specifically tailored to individual project needs, and NBPD offers free summaries of the data. Regardless of the method utilized (or, perhaps more importantly, the available budget), Avondale could benefit greatly by committing to a consistent collection of bicycle and pedestrian data.

Summary

Avondale is clearly committed to providing its residents with a greater degree of flexibility in terms of modal choice. The transformation of Central Avenue is a great first step in accomplishing this goal. Through adequate planning and evaluation, this project

could act as an example for future developments to follow. The benefits of Complete Streets policies are significant and widespread. A concerted effort to clearly convey these benefits to policymakers and residents is necessary to ensure that developments like this become the norm in the future.

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