

AutoCASE Beta Testing Project FOREWORD



Green Infrastructure/Low Impact Development (GI/LID) are key design strategies that will allow our region to build value-added community benefit into upcoming infrastructure projects. Understanding the economics is as important as understanding the planning and technical mechanics of GI/LID stormwater-water infrastructure design solutions. This cost-benefit report, tailored with data specific to the arid southwest, is a tool to evaluate the spending of public funds for GI/LID solutions.

We hope design and construction professionals will review this information, make recommendations and apply GI/LID practices whenever feasible. GI/LID practices are essential tools to make our region more resilient and adaptable to changing natural weather conditions while also improving the quality of life for our residents.

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Background:

In October 2010, the City of Tucson and Pima County completed a joint *Water-Wastewater Infrastructure, Supply and Planning Study, 2011-2015 Action Plan for Water Sustainability*. As part of the Action Plan, Phase 2 Goals and Recommendation included "Goal 5: Increase the use of rainwater and stormwater to reduce demands on potable supplies"; with a subgoal "5.1: Develop design guidelines for neighborhood stormwater harvesting." As the City and County developed a GI/LID Working Group to assist with development of the *Low Impact Development and Green Infrastructure Guidance Manual* (GI/LID Guidance Manual), the effort became a regional effort. A GI/LID resolution was adopted by the Pima Association of Governments' (PAG) Regional Council of Governments in 2012.

In the summer of 2013, a five person team of the GI/LID working group was able to attend a Climate Leadership Academy on Adaptive Water, Resource and Infrastructure held in Philadelphia, PA. This team brought a wide background of regional knowledge on water conservation, drought, transportation infrastructure, stormwater quality planning, heat impacts and tree resilience, and flood mitigation design performances.

The Academy was put together by the Institute for Sustainable Communities (ISC) and included teams from 11 different communities across the United States. Traveling to Philadelphia, the Tucson team highlighted desert southwest issues (heat, drought and flooding), in contrast with the other communities attending the Academy (excessive rainfall, combined sewer-stormwater overflow systems). Our team's efforts were leading the way for unique arid southwest applications as well as other regions beginning to face climate change.

One of the reasons for developing the GI/LID Guidance Manual was to provide a tool for professional designers, including engineers, landscape architects, planners, developers and non-profit organizations, to utilize and better understand design configurations and the benefits of GI/LID. Economic comparisons and assessments of environmental and social impacts of GI/LID needed to be a part of the Guideline in order to provide information about GI/LID benefits. This comparison then provides a framework for how our community can plan and adapt to become more resilient utilizing GI/LID in stormwater-management.

John Williams II, Chairman and CEO of Impact Infrastructure, LLC (II, LLC) was a part of the Academy's Resource Team and presented an automated business case evaluator, AutoCASE™, for infrastructure projects. AutoCASE™ was currently in the beta stage of testing for stormwater infrastructure. Through discussion with Mr. Williams, we found that this tool could provide an affordable cost-benefit analysis into the GI/LID Guidance Manual and that data could be added to calibrate it to be arid southwest region specific.

PC RFCD and PAG provided the funding to contract with II, LLC and Stantec to beta test AutoCASE™ in this region. We were able to add arid southwest specific data and request additional concepts that were not part of the original software design which resulted in a more comprehensive analysis for our region. They evaluated the multibenefits and determined Sustainable Net Present Value (a cost-benefit calculation that also considers environmental and societal benefits) for seven common GI/LID practices as well as a suite of practices used at two different sites to illustrate how the costs and benefits of GI/LID can be considered in our community.