

Implementing Environmental Protection During an Economic Downturn: Low Impact Development and Green Infrastructure Make \$ense

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Background

Today's economic climate has made it necessary for communities to focus on cutting costs and improving efficiencies. The national economy is weakening. The state budget is in a structural deficit resulting in reduced economic performance. Local budgets have decreased to the point of solely focusing on, and even cutting, core services.

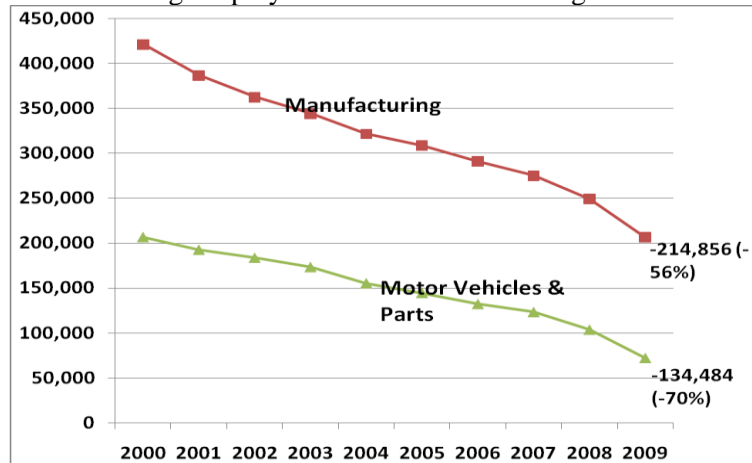
The Catch 22 is that basic water quality protection needs to be met in order to continue to provide clean water for drinking, recreation, and positioning our state for future economic growth. Put another way, innovative stormwater management also known as Low Impact Development (LID) is a difficult "sell" when competing with critical local issues, such as raising taxes, cutting services and/or jobs, entering into more joint ventures, and/or increasing government efficiencies to meet as many citizen needs as possible.

SEMCOG is embracing this challenge by providing positioning the issue of LID in terms more effective to local governments at this time such as: saving money, reducing costs, increasing taxable value, and meeting federal and state mandates.

Economic indicators for Michigan

There are many factors that are contributing to the decline of the local economy. These factors can be general indicators that gauge the health of the local economy such as unemployment rates and foreclosures. However, they can also include location specific causes such as the loss of manufacturing jobs in the region (Figure 1) leading to higher unemployment rates. Identifying these economic indicators is an important first step in recognizing the economic distress of the region as well as outlining potential solutions to successfully managing local government resources and managing water quality during this time.

Figure 1
Manufacturing Employment in Southeast Michigan

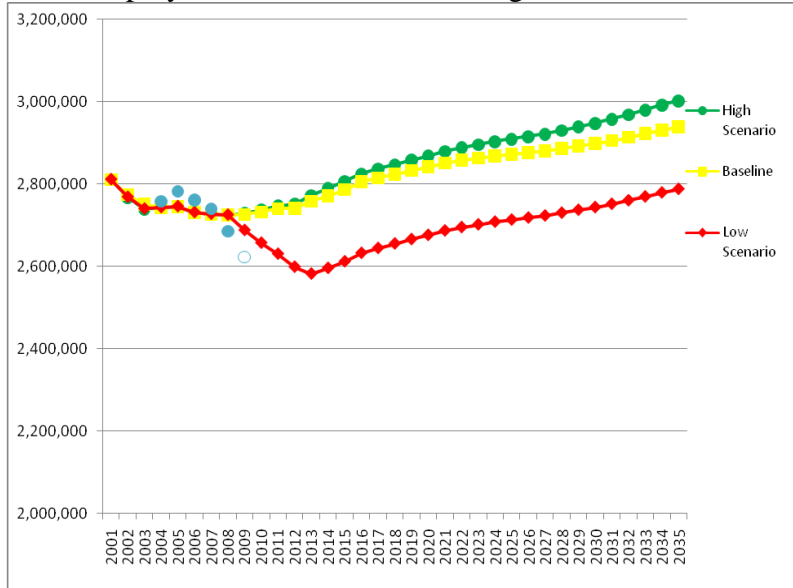


Source: Michigan Labor Market Information, SEMCOG

Employment

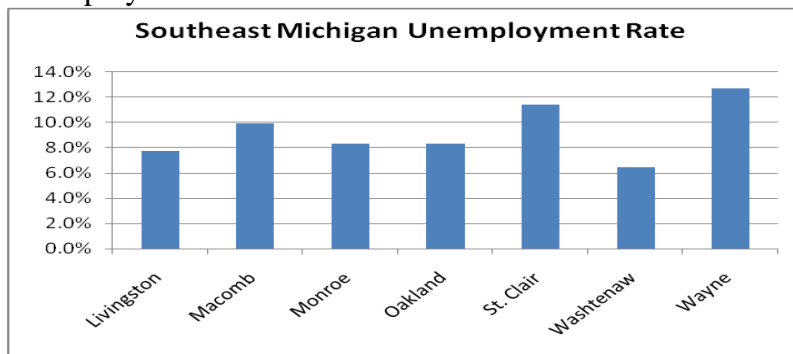
Declining employment opportunities in the region (Figure 2) suggest higher unemployment rates, which may lead to increased residential foreclosures, decreased consumer spending, and overall economic decline (Figure 3). Changes in employment are closely related to changes in state income and sales tax collections. If fewer people are working, there will be less income tax revenue and also less consumption. Consumption — and thus sales tax revenue — also will be affected, since people who have lost jobs or who think their jobs are in jeopardy are unlikely to buy big-ticket items such as cars, appliances, and furniture, which generate the bulk of most states' sales tax revenue.

Figure 2
Total Employment for Southeast Michigan



Source: SEMCOG 2035 Forecast

Figure 3
Unemployment Rate as of June 2008



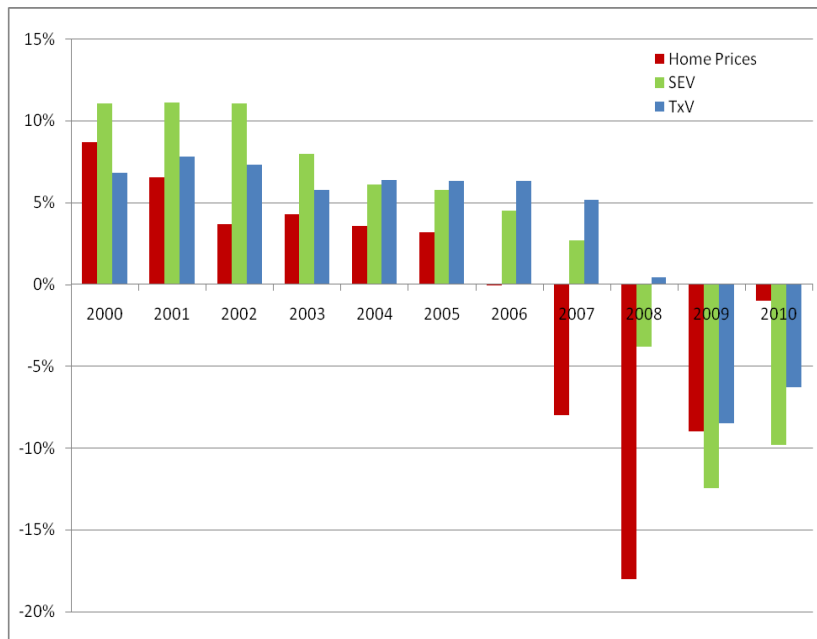
Source: HUD Neighborhood Stabilization Program - Revised 10-20-08

Local Governments Ability to Pay for Services

As a result of reduced federal and state funding available for water quality programs, local governments are forced to consider alternative sources. Local shares can come from numerous sources including property taxes, special assessments, general fund, and stormwater fees. Revenue generated from local property taxes and the local general fund is in sharp decline, while rates and special assessments are difficult politically to increase during times of economic distress.

In Southeast Michigan, declining home values are causing a decline in taxable values in many communities. Most, if not all, communities face declining taxable value in the coming years. The loss in taxable value means local governments and school districts will have less revenue from property taxes in the near future. Communities with higher concentrations of residential property, higher rates of newly developed property, and higher rates of recently sold property will most likely start losing tax base (Figure 4). Residential property comprises 75 percent of the region’s property tax base, so it is not surprising that falling home values will impact property tax revenues in the immediate to short-term future.

Figure 4
Housing Prices, SEV, and Taxable Value: Year-on-Year Percent Change



Source: SEMCOG

Property taxes are the most significant source of revenue for local governments and school districts. Statewide, property taxes account for 54 percent of general revenue from local sources and 26 percent of revenue from all sources, including revenue sharing and fees (Table 1). With these sources of funding in sharp decline, it is difficult for communities to fund both essential and environmental services and programs.

Table 1
Revenue Sources for All Michigan Local Governments, 2005-2006

| Source | Revenue | Percent | Percent from Local Sources |
|-------------------------------|-----------------------|---------------|----------------------------|
| Local | 20,826,788,000 | 48.0% | |
| Property Taxes | 11,284,723,000 | 26.0% | 54.2% |
| Charges and Other | 9,542,065,000 | 22.0% | 45.8% |
| Intergovernmental | 18,417,779,000 | 42.5% | |
| Utilities and Insurance Trust | 4,132,370,000 | 9.5% | |
| Total Revenue | 43,376,937,000 | 100.0% | |

Source: Census Bureau

Moving LID forward in Michigan

Moving LID forward in Michigan is going to take a two-prong approach: 1) buy in from local governments during these economically challenging times to embrace LID and 2) Implement LID locally through a myriad of techniques.

As noted in the background, local governments have a significant need to focus on meeting essential services in their community and may be rightfully concerned about taking on new initiatives. Therefore, linking stormwater management to the desired outcomes of the community is essential.

Desired Outcome: Increasing Taxable Value

A key desired outcome to local governments is increasing taxable value in their community. With the decrease in housing prices, Southeast Michigan local governments will continue to experience decreases in taxable value in their community.

One connection that needs to be made is the relationship of water and green infrastructure to increased taxable value in the community. Studies have shown that property values are increased in areas close to water features and green infrastructure when compared to similar homes in the area (Tables 2, 3, 4). This issue is directly connected to LID because both revegetation and protection of natural features result not only in increased taxable value, but include stormwater and air quality benefits. For example, a study was performed in 2005 to determine the value in terms of stormwater and air quality benefits that the tree canopy in the City of Detroit provides (Table 5).

What is LID?

From a stormwater management perspective, low impact development (LID) is the application of techniques that emulate the natural water cycle described in the previous section LID uses a basic principle modeled after nature: manage rainfall by using design techniques that infiltrate, filter, store, evaporate, and detain runoff close to its source.

Techniques are based on the premise that stormwater is a resource, not a waste to be quickly transported and disposed. Instead of conveying and managing/treating stormwater in large, costly, end-of-pipe facilities located often at the bottom of drainage areas, LID addresses stormwater through small, cost-effective landscape features often located at the lot level.

Table 2

Effect of Water Amenities on Property Values, Hillsdale County

| Location of House from Water | Percentage gain in property value* | Amount gained in property value* |
|------------------------------|------------------------------------|----------------------------------|
| Within 15 m | +81.9% | +\$88,399 |
| 15-75 m | +38.5% | +\$38,264 |
| 75 – 150 m | +22.9% | +\$22,760 |

*Compared to properties located more than 450 meters away
Source: MSU Land Policy Institute, 2008.

Table 3

Effect of Recreational Amenities on Property Values, Oakland County

| Location of House from Recreational Land | Percentage gain in property value* | Amount gained in property value* |
|--|------------------------------------|----------------------------------|
| Within 15 m | +3.1% | +\$7,942 |
| 15-75 m | +3.2% | +\$8,198 |
| 75 – 150 m | +2.2% | +\$5,636 |
| 150 – 300 m | +2.6% | +\$6,661 |

*Compared to properties located more than 450 meters away
Source: MSU Land Policy Institute, 2008.

Table 4

Walkable/Bikeable Green Infrastructure on Property Values, Oakland County

| | Within 100 m | 100-500 m | 500 – 1,000 m | 1,000 – 1,500 m |
|------------------------|---------------------|------------------|----------------------|------------------------|
| Property value affects | Insignificant | +4.6% | +2.3% | +6.3% |

*Compared to properties located more than 450 meters away

Source: MSU Land Policy Institute, 2008.

Table 5

Value of Green Infrastructure

| | Acres | 2005 Tree Canopy | Stormwater Management Value (cu. Ft.) | Stormwater Management Value (\$) | Air Pollution Removal Value (\$) |
|-----------------|--------------|-------------------------|--|---|---|
| City of Detroit | 89,216 | 27,863 | 190.8 million | \$382 million | \$5.1 million |

Source: Urban Ecosystem Analysis SE Michigan and City of Detroit, American Forests

Desired Outcome: Reducing Costs/Increasing Efficiency

Due to the economic climate, many communities are forced to take a hard look at reducing costs and increasing efficiency. In some instances reducing costs has resulted in a reduction in staff. In moving LID forward, it's important to link LID to their outcomes such as the need for less staff to mow the grass if it's utilized as native vegetation. This is successfully being accomplished in Wayne County along Hines Park as part of their Grow Zone project.

Increasing efficiency at the local level includes increasing energy efficiency within their buildings. LID should link with energy efficiency by illustrating that certain energy efficiencies also have other positive outcomes to the community, including stormwater management and economic development. For example, simply planting trees and utilizing green roofs have numerous energy efficiency benefits, but also provide stormwater, air quality, and economic benefits.

Desired Outcome: Meeting Federal and State Regulations.

Another important outcome to local governments is meeting federal and state regulations, such as stormwater requirements and fugitive dust plans. In Southeast Michigan over 135 communities need to meet the Phase II stormwater requirements. Many of these requirements, such as the post construction requirements, public education, and good housekeeping requirements can work hand-in-hand with LID implementation. For example, when Macomb County Public Works implemented a rain garden on their property, they met post construction requirements and education requirements by inviting the public to participate in the planting of the rain garden. As a result, this project helped meet permit requirements, but also provides a demonstration site for LID implementation in the county.

Desired Outcome: Attract Knowledge Based Economy

Outdoor recreational opportunities are considered an attraction for recruiting new, talented residents and tourists to Michigan, which will contribute to the overall economy in the state. A survey on the impact of Oakland County's quality of life factors was commissioned by the Oakland County Planning and Economic Development Department. This study revealed that 60% of businesses surveyed ranked access to outdoor recreational opportunities as moderately, very, or extremely important to employee recruitment/retention.

The trend is increasing in the new emerging economy for people to choose their community first over their place of employment. Understanding the features of this new economy will enable local governments to determine how to use LID practices while attracting tourists as well as knowledge workers to their communities.

Table 6

Comparison of Old and New Economy

| Key Features of the Old Economy | Key Features of the New Economy |
|--|--|
| Cheap place to do business was key | Being rich in talent and ideas is key |
| Attracting companies, any large company | Attracting talented and educated people |
| Industrial sector (manufacturing) focus | Sector diversity is desired, and clustering of related sectors is preferred. |
| Fossil fuel dependent manufacturing | Communications dependent but energy smart |
| A high-quality physical environment was a luxury which stood in the way of attracting cost-conscious business | Physical and cultural amenities are key in attracting knowledge workers |
| Success = fixed competitive advantage in some resource or skill. The labor force was skills dependent. | Success = organizations and individuals with the ability to learn and adapt. |
| People followed jobs | Talented, well-educated people choose location first, then look for a job |
| Economic development was government-led. Large government meant good services. | Bold partnerships with business, government and nonprofit sector lead change. |
| Connection to global opportunities not essential. | Connection to emerging global opportunities is critical |

Source: Dr. Solji Adelaja, Michigan State University Land Policy Institute

Desired Outcome: Provide Recreational Opportunities and the Economic Benefit That Comes Along with It

Local communities strive to provide opportunities for their residents to recreate close to home. At the same time, local businesses and government also benefit economically by providing these resources. Again, green infrastructure in particular can provide these recreational opportunities and at the same time provide stormwater management, resulting in cleaner water which provides for more recreational opportunities and more income to the area economy.

Economic Benefit of Recreation

Michigan ranks 3rd in the nation in licensed hunters (over 750,000), contributes \$1.3 billion annually.

Michigan is 8th in number of anglers, with \$2 billion economic contribution.

Michigan is 1st with the number of registered boats and snowmobiles, with \$2 billion economic contribution

Source: Michigan Department of Natural Resources

Assisting Local Communities in Meeting the Desired Outcomes

Agencies such as SEMCOG need to understand these desired outcomes of the community and formulate water resource protection around these outcomes. In doing so, organizations should provide the connection to local decision makers on how LID can meet their desired outcomes.

Another important step is to provide the technical information necessary for local communities to meet their desired outcomes through LID. SEMCOG developed the LID manual for Michigan specifically for this purpose. However, a manual alone is not going to move LID forward in Michigan.

Local communities need general training to understand the important link between their desired outcomes and LID. But, often that's where we stop. We need to continue beyond the typical workshop presentation and move into individual implementation. We need to provide direct technical assistance to local communities, including:

- Discuss the community's desired outcomes at the board/council level and illustrate how LID can assist in meeting these outcomes.
- Site visits to municipal property to assess a site for LID opportunities.
- Assist individual communities in updating their master plans and ordinances to incorporate LID techniques.
- Highlight successes through case studies, tours, etc., so that we all can learn from each other.
- Provide a financing mechanism for stormwater management such as legislation that positions communities to utilize stormwater utilities in Michigan.

Implementation at local level

Once local governments support clean water through stormwater management and green infrastructure make sense to their community to meet their desired outcomes, there are a number of activities communities can undertake to move implementation forward at the local level.

1. **Integrate LID into municipal projects.** Many communities are hesitant to jump into LID by mandating it from development. In Michigan, we have seen LID implementation evolve from integrating LID into municipal projects and slowly integrating it throughout the community. Providing demonstration sites will show that certain technologies can be successful in Michigan and meet regulatory approval.
2. **Protect natural areas.** Protecting sensitive and special value features is the process of identifying and avoiding certain natural features during development. This allows these features to be used for various benefits, including reducing stormwater runoff. Protecting sensitive areas can be implemented both at the site level through the site plan review process and throughout the community through the use of community ordinances.
3. **Revegetate.** Using native plants to vegetate an area is an effective method of improving the quality and reducing the volume of site runoff. Native plants significantly change the soil medium by adding carbon, decreasing bulk density, and increasing infiltration rates
4. **Minimize disturbed area.** A key component of LID is to reduce the impacts during development activities such as site grading, removal of existing vegetation, and soil mantle disturbance. This can be achieved through developing a plan to contain disturbed areas.

Minimizing the total disturbed area of a site specifically focuses on how to minimize the grading and overall site disturbance, maximizing conservation of existing native plant communities and the existing soil mantle of a site. If invasive plant species are present in the existing vegetation, proper management of these areas may be required in order for the vegetation to achieve its greatest hydrological potential.

5. **Reduce impervious surfaces.** Reducing impervious surfaces includes minimizing areas such as streets, parking lots, and driveways. By reducing the amount of paved surfaces, stormwater runoff is decreased while infiltration and evapotranspiration opportunities are increased.
6. **Remember good housekeeping.** Many LID BMPs operate more effectively and require lower maintenance when pretreatment is provided to remove pollutants (e.g., sediment) that can clog the BMP. Pretreatment devices can include structural BMPs such as filter strips and water quality devices. Local communities can also employ good housekeeping practices that will reduce rehabilitation and replacement costs of stormwater BMPs by preventing or addressing problems early. For example, a street sweeping program will reduce the amount of sediment entering BMPs (e.g., bioretention, porous paving) that can become clogged from sediment deposition.

7. **Integrate into local plans and policies.** By design, the master plan sets the course for a community and its residents for the future. It serves as a guide for community leaders in adopting capital improvement plans and annual operating budgets. Also, in Michigan, master plans are the basis for zoning ordinances.

While the master plan is the guide for a community's future, it is also the legal foundation for local land use laws. Therefore, it is important for the community's master plan to acknowledge the importance of LID and stormwater management and relate it to protecting the health, safety, and welfare of its residents.

8. **Develop LID-friendly regulations.** Once the master plan has included language supportive of LID, developing ordinances that directly support LID implementation is essential to ensuring communitywide implementation. Equally important is ensuring that existing ordinances are compatible with LID implementation.
9. **Educate the public.** Support of the public, elected officials, environmental organizations, etc., is imperative for moving LID forward in a community. Public education and participation are key features of a comprehensive stormwater management program. This includes educational materials such as signage and web sites, demonstration sites and tours, providing public involvement opportunities, and engaging the media.
10. **Provide incentives.** While some communities may choose to implement a regulatory mechanism, such as a stormwater ordinance requiring the use of LID, other stakeholders may choose to use an incentive program or a combination of regulations and incentives to encourage LID practices. Following are example incentives that could be implemented at various levels of government:
 - Allow for a state income tax credit for qualifying LID techniques.
 - Offer a bonus such as increased floor area (e.g., floor area ratio) if LID practices are used that accomplish stormwater management goals. Accelerate plan reviews for site plans implementing LID techniques.
 - Reduce fees charged to the applicant (e.g., planreview fees, utility fees) for site plans implementing LID techniques.
 - Offer a density bonus (e.g., allow for an additional lot) to developments that implement LID practices.

Conclusion

While local governments are struggling to provide core services to their residents, clean water and green communities make sense. Ignoring all environmental protection efforts during this economic downturn could lead to long-term problems. Therefore, it is important for organizations such as SEMCOG to provide the information and technical assistance to local communities to make good decisions that lead to meeting their desired outcomes and can also look at long-term protection of our water resources.

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