



CITY COUNCIL AGENDA ITEM

Date: September 15, 2011

To: John Szerlag, City Manager

From: Mark F. Miller, Director of Economic & Community Development
R. Brent Savidant, Planning Director

Subject: Sustainable Development Checklist

Background

The recently adopted Zoning Ordinance contains Sustainable Development provisions that promote environmentally sustainable and energy efficient design and development practices (see Section 12.01).

There are provisions identified throughout the Zoning Ordinance where sustainable design measures may be used to satisfy a specific requirement. For example, parking in the front yard is not permitted in the IB Integrated Industrial and Business District except in cases where a site plan has prequalified Sustainable Design Project (SDP) project status. A property owner wishing to use this development option would file an application seeking SDP status. Once prequalified as a SDP, the use of a sustainable design measure to satisfy a specific Ordinance requirement is authorized. Approval of the Final Site Plan is considered the formal approval of the SDP status of the project. The SDP Process Summary is included in section 3 of the Sustainable Development Checklist.

The process requires the creation of a Sustainable Development Checklist, separate from the Zoning Ordinance. The Planning Commission prepared the attached Sustainable Development Checklist and recommended approval of the document at the September 13, 2011 Regular meeting.

Recommendation

City Management recommends approval of the Sustainable Development Checklist.

City Attorney's Review as to Form and Legality

Date

Attachments:

1. Section 12.01 of the City of Troy Zoning Ordinance
2. Sustainable Development Checklist

ARTICLE 12

SUSTAINABLE DESIGN AND ENVIRONMENTAL STANDARDS

SECTION 12.01 SUSTAINABLE DESIGN OPTION

- A. Intent. It is the intent of this Section to promote environmentally sustainable and energy efficient design and development practices for the construction of new and the rehabilitation of existing buildings and sites within the City. Pursuant to the sustainability initiatives set forth in the [City of Troy Master Plan](#), the purpose of these regulations are to provide various incentives that will achieve the following:
1. Encourage the reuse of existing buildings and redevelopment of existing sites.
 2. Conserve natural resources.
 3. Reduce the use of energy in both construction and daily operations.
 4. Foster a mix of uses and pedestrian, bicycle, and public transit use.
- B. Eligibility. Any project for which site plan review is required, including subdivisions and site [condominiums](#), may apply for qualifications as a Sustainable Design Project (SDP).
- C. Effect of Qualifications as a Sustainable Design Project. There are provisions identified throughout the Zoning Ordinance where the use of sustainable design measures may be used to satisfy, modify, or replace a specific requirement. Once prequalified as a SDP, the use of a sustainable design measure to satisfy a specific Ordinance requirement is authorized. Approval of a site plan with a modification permitted under this Section shall be considered the formal approval of the SDP status of the project.
- D. Procedure.
1. An application for a SDP may be obtained from the [Zoning Administrator](#). An applicant seeking qualification as a SDP shall submit a complete SDP application, accompanied by a complete SDP checklist and supportive narrative which verifies how specific measures will be achieved, to the Zoning Administrator.
 2. Qualification as a SDP is based upon the use of specific measures to offset the potential impact of modifying specific areas of the Ordinance. The SDP checklist identifies potential sustainable design measures eligible to modify specific provisions of the Ordinance.

3. Applications for a SDP shall be reviewed by the Sustainable Design Review Committee, which shall consist of the [Planning Director](#), [City Engineer](#), [Building Official](#), and two (2) members of the [Planning Commission](#) designated by the City Manager. The Sustainable Design Review Committee may request the review of a SDP application by consultants with specific expertise in sustainable design.

4. Upon completion of the review, the Sustainable Design Review Committee shall make a determination whether a project meets the qualifications as a SDP. If the committee makes a positive determination, the project will have Prequalified SDP status, which will make the project automatically eligible for the requested modification during site plan review and approval. Approval of a site plan with a modification permitted under this Section shall be considered the formal approval of the SDP status of the project.

SECTION 12.02 STORMWATER MANAGEMENT

A. Intent. The intent of this Section is to encourage the use of structural, vegetative or managerial practices, commonly referred to as best management practices (BMP's), designed to treat, prevent, or reduce degradation of water quality due to storm water runoff. All development projects subject to site plan review shall use best management practices (BMP's) to prevent flooding, protect water quality, reduce soil erosion, maintain and improve wildlife habitat, and contribute to the aesthetic values of the project. The particular facilities and measures required on-site shall reflect and incorporate existing grade, natural features, wetlands and watercourses on the site to the maximum extent feasible.

B. Sustainable Design. While stormwater management is required to meet the City Engineering Design Standards, certain BMP's may be used to satisfy qualification as a Sustainable Design Project, as set forth in [Section 12.01](#).

C. Stormwater Management. All stormwater management plans shall meet the Engineering Design Standards adopted by the City as determined by the City Engineer, and shall utilize nonstructural control techniques to the maximum extent feasible, including, but not limited to:

1. Limitation of land disturbance and grading.
2. Maintenance of vegetated buffers and natural vegetation.
3. Minimization of impervious surfaces.
4. Use of terraces, contoured landscapes, runoff spreaders, grass or rock-lined swales.
5. Use of infiltration devices.

City of Troy

Sustainable Development Checklist

Established by Section 12.01 of the City of Troy Zoning Ordinance

DRAFT

September 14, 2011

Adopted by the Troy Planning Commission on XXXXXX

TROY Sustainable Development Project Checklist

1. Summary

The purpose of the Sustainable Development Project (SDP) option is to encourage development and redevelopment in the City of Troy to incorporate features designed to minimize adverse impacts on the natural and built environment. The SDP option is established by Section 12.01 of the Zoning Ordinance. SDP status will empower applicants to seek a modification from certain elements of the Zoning Ordinance and receive benefits directly related to the sustainable features proposed for their project.

This SDP application includes a variety of areas within which a project can provide sustainable measures in exchange for regulatory flexibility. Once it has been determined that a project design has included measures which are directly related to and which mitigate for the modification sought by the applicant, Prequalified SDP status can be awarded by the Sustainable Development Review Committee (SDRC). There are 7 groups of potential measures provided which can be applied to a variety of areas within the Zoning Ordinance.

2. Zoning Ordinance Sections for which SDP status may be granted

The SDP process is voluntary, and may be applied to any application requiring site plan review under Section 8.02 of the Zoning Ordinance. This includes conventional projects requiring site plan review or special use approval. SDP projects may receive modifications from the Zoning Ordinance in the following six areas:

- A. Lot Coverage: For projects having SDP status, maximum lot coverage may be reduced in the R1-A through R1-C Districts, RT, MF, UR, CF, IB, OM, and RC Districts (Sections 4.06.D.5, 4.07.D.5, 4.08.D.6, 4.09.D.6, 4.11.D.3, 4.15.D.4, 4.17.D.5, 4.18.D.6,).
- B. IB Front Yard Parking: For projects having SDP status, Front yard parking may be permitted in the IB District (Section 4.15.D.3.a).
- C. One Family Cluster Density Bonus: SDP Status may be used as a qualifying factor for a dwelling unit density bonus in projects utilizing the One-Family Cluster Option (Section 10.04.D.2.a).
- D. One Family Cluster Dimensional Modifications: SDP Status may be used as a qualifying factor for dimensional requirement flexibility in projects utilizing the One-Family Cluster Option (Section 10.04.E.2).
- E. Landscaping Flexibility: All landscaping requirements within Section 13.02, Landscaping, may be modified for projects having SDP status. This includes greenbelt landscaping, screening, parking lot landscaping, and general

landscaping requirements (Section 13.02).

- F. Parking Requirement Deviations: Projects with SDP status are automatically eligible for a parking deviation if the measures proposed and the Prequalified SDP status is granted for measures directly related to the requested change in parking (Section 13.06.F).

3. Application Requirements and Administration

Figure 1: SDP Process Summary

Steps	
1	Applicant files an application seeking Prequalified SDP status for one of the purposes identified herein.
2	Zoning Administrator reviews the application to ensure that measures intended to satisfy the Prerequisites are proposed for the area of relief being sought, and that at least one qualifying measure is proposed for the area of relief being sought (Table 1)
3	The Sustainable Design Review Committee meets and considers the application within 30 days of the Zoning Administrator's formal determination that the application is complete.
4	The Committee takes action on the request. If the Committee finds that the proposed measures will adequately offset the requested modification, the Committee shall grant the applicant Prequalified SDP status.
5	The project goes through the site plan approval process.
6	The SDP status is ratified by final site plan approval

Projects seeking SDP status shall meet the following criteria and prequalification:

- A. Application: The application for SDP status shall contain the following information:
 1. Applicant's name, address, and telephone number. Professional seals are not required at the SDP application stage.
 2. Common description of the property and complete legal description.
 3. Dimensions of land, including width, length, acreage, and frontage.
 4. Existing zoning and current land use of the property under consideration and zoning and current land use of all adjacent properties.
 5. General location of all existing structures, roadways, and natural features.
 6. The general location of all proposed buildings, roadways, parking areas, and any other changes proposed to be made on the subject property.
 7. A specific list of proposed sustainable design measures being proposed with the following supporting information:
 - a. Any manufacturer information, such as specifications or cut sheets that detail the technology, attributes, and anticipated benefits of the features or equipment.

- b. Identification on the drawings providing information about the location, general design, and application of the sustainable design features being proposed.
 - c. A specific list of the areas within the Ordinance for which benefits are being sought with the SDP application.
 - d. A long-term maintenance plan documenting the proposed method of care for the measures being proposed.
- B. Prerequisites and Qualifying Measures: The application will first be reviewed by the Zoning Administrator to ensure that it specifically lists the benefits for which the application is being filed and demonstrates that the areas of the Ordinance for which an application is seeking or benefits are proportionally related to the SDP measures being proposed. *Every area of the Ordinance for which modification can be sought has at least one category of potential measures from which the applicant MUST select and incorporate sustainable design measures. These required sustainable design measure categories are Prerequisites.*

For instance, if an applicant wishes to provide less open space (exceeding lot coverage) than is required by the Ordinance, the categories of measures identified as Prerequisites include measures that would mitigate the negative consequences of providing insufficient open space. In this example, the applicant would be required to provide measures in each of the following areas of stormwater quantity control, stormwater quality control and reduction of heat island effect.

Every area of modification also has measure categories identified as Qualifying. Every project must, in addition to the Prerequisites, provide a measure in one Qualifying category. For instance, in the example above, in addition to providing measures in the Prerequisite categories (stormwater quantity control, stormwater quality control and reduction of heat island effect), they would also be required to provide a measure in one of the following Qualifying areas: redevelopment and reuse, brownfield redevelopment, light pollution reduction, or water recycling.

- C. Sustainable Design Review Committee: Within 30 days of the Zoning Administrator's formal determination that the application is complete, the Committee shall review any application that has been determined to meet the minimum required criteria for application for SDP status and has met the prerequisite standard of proposing measures directly related to the area or areas from which the applicant is seeking modification. The Committee will review the proposal and each proposed measure and requested modification contained in the application. If the Committee finds that the proposed measures will adequately offset the requested modification, the Committee shall grant the application Prequalified SDP status.

- D. Compliance: Throughout the course of site plan or special use approval, the SDP application and findings of the Sustainable Design Review Committee shall be contained in the application. These materials will be reviewed throughout the process by the Zoning Administrator or designee for compliance to Prequalified SDP status. The applicant shall enjoy SDP benefits or modification as outlined in the Prequalified SDP application approved by the Committee. Once a project is complete, the Zoning Administrator shall make a determination that the Committee's findings are confirmed. If a change to the project affects the conditions spelled out in the Prequalified SDP findings, the applicant shall lose the benefits provided by the SDP status or shall reappear before the Committee to request a revised prequalification.

- E. Prequalified SDP status shall become permanent when the Zoning Administrator grants final site plan approval, at which time the project is determined to have achieved full SDP status. The measures and modifications approved as part of the full SDP status are, like any element contained within an approved site plan, a required element of that final site plan and must be adhered to.

4. Sustainable Design Measures

The SDP option provides for seven areas where an applicant can provide sustainable design measures to seek flexibility in the six areas noted in Section 2, above. It is incumbent upon the applicant to devise an application submission demonstrating that the measure is met. The measures may be applied to the area of regulatory flexibility as follows in Table 1.

Table 1: Prerequisite and Qualifying Measures

P = Prerequisite. To obtain Prequalified SDP status, a project MUST include measures in the categories identified as a Prerequisite, below. (Example: Lot Coverage flexibility can only be granted if stormwater quality, stormwater quantity, heat island effect, and water efficient landscaping measures are proposed.)

Q = Qualifying. This measure will qualify as a supporting measure to achieve SDP status for the area under consideration for modification. These options help mitigate the potentially negative factors resulting from the requested modification. Every project qualifying for SDP status must provide at least one Qualifying measure in addition to the Prerequisites for the area of modification.

X = Indicates that this measure will not satisfy the requirements to achieve SDP status.

	A		B		C		D	E	F			G			
Category	Stormwater		Site Selection		Transportation		Light Pollution	Heat Islands	Water Resources			Renewables			
	Quality	Quantity	Redevelopment and Reuse	Brownfields	Alternative Fuel Vehicle Facilities	Commuter			Water Efficient Landscaping	Water Use Reduction	Water Recycling	Solar	Wind	Geothermal	Other
Lot Coverage	P	P	Q	Q	X	X	Q	P	P	X	Q	X	X	X	X
IB District Front Yard Parking	P	P	Q	Q	Q	Q	P	Q	Q	X	Q	X	X	X	X
One Family Cluster Density Bonus	P	P	X	X	Q	Q	P	Q	Q	Q	Q	Q	Q	Q	Q
One Family Cluster Dimensional Flexibility	P	P	X	X	Q	Q	P	Q	Q	Q	Q	Q	Q	Q	Q
Landscaping Flexibility	P	P	X	X	X	X	X	Q	P	Q	Q	X	X	X	X
Parking Requirement Deviations	Q	Q	Q	Q	P	P	P	Q	X	X	X	X	X	X	X

A. Stormwater

Urban development has complicated and, in many cases, impeded the natural cycle of our water resources. By introducing impervious surfaces on a large scale the recharging of groundwater, infiltration of stormwater into the landscape, and flow and volume of rivers and streams have been disrupted. Further, contaminants from automobiles, chemicals from industry, eroded soils, and other undesirable substances have become commonplace, and are frequently washed away with stormwater into the natural environment. By improving the way stormwater is managed on-site, development can mitigate these potentially negative consequences. Low Impact Design techniques reduce the quantity of stormwater leaving a site, and also improve the quality of that water.

Stormwater Quantity

To receive Prequalified SDP status for stormwater quantity measures, an applicant may propose to do the following, or additional measures not specifically listed here, provided that the applicant can demonstrate that similar benefits will be realized:

- RAIN GARDENS.
- SWALES.
- MANUFACTURED WETLANDS.
- GREEN ROOF.
- CISTERNS.
- PERMEABLE PAVING.
- PRESERVATION OF NATURAL AREAS BEYOND WHAT IS REQUIRED.

Stormwater Quality

To receive Prequalified SDP status for stormwater quality measures, an applicant may propose to do the following, or additional measures not specifically listed here, provided that the applicant can demonstrate that similar benefits will be realized:

- RAIN GARDENS.
- SWALES.
- MANUFACTURED WETLANDS.
- GREEN ROOF.
- CISTERNS.
- PERMEABLE PAVING.
- PRESERVATION OF NATURAL AREAS BEYOND WHAT IS REQUIRED.

B. Site Selection

Renovation of an existing building or site is often more sustainable than new construction. The renovation of existing facilities reduces landfill waste and reduces the need for new materials. Also, the renovation of existing facilities often eliminates the need for changes to underground utilities, access and circulation, and open space, given that building footprints are often preserved. These advantages mean that redevelopment properties can often be revitalized more quickly, efficiently, and sustainably than new construction.

Brownfield projects are often situated in excellent, high-traffic or well developed areas, although in most brownfield cases, the site is environmentally contaminated. This is a disadvantage to the developer in that there is often costly mitigation that must occur in order to make the site useful. Using SDP, the City can incentivize brownfield redevelopment.

Redevelopment and Reuse

To receive Prequalified SDP status for redevelopment and reuse measures, an applicant may propose to do the following:

- USE A SITE THAT IS PREVIOUSLY DEVELOPED AND VACANT.

Brownfield Site

To receive Prequalified SDP status for brownfield site measures, an applicant may propose to do the following:

- USE A SITE ON WHICH CONTAMINATION EXISTS AT CONCENTRATIONS IN EXCESS OF THE STATE OF MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY'S (MDEQ) REMEDIATION CRITERIA OF PART 201, ENVIRONMENTAL REMEDIATION, OF THE NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION ACT, 1994 PA 451, AS AMENDED. THIS DETERMINATION MUST BE MADE IN WRITING BY THE MDEQ.

C. Transportation

Purpose:

Electric, hybrid, natural gas, fuel cell, or other alternative fuel vehicles help reduce greenhouse gas emission and fuel demands. Supporting these vehicles also encourages innovation and job creation in the automotive industry, thereby supporting job growth in Troy and Southeast Michigan. The infrastructure for alternative fuel vehicles is in its infancy, although a few simple elements can be incorporated into new development and redevelopment to empower adopters of new automotive technology to function in Troy. This approach will also help Troy compete for residents and companies that are attracted to this aggressive approach to promoting new technology.

Beyond alternative fuel vehicles, the community realizes even more benefit from those who choose transit or non-motorized means to get to the homes, jobs, and everyday activities. Successful regional transit will allow a wider range of people to choose Troy as a home or destination. Non-motorized transportation has both an environmental and overall community health benefit. Both options increase the number of pedestrians on the street, supporting the density in certain areas that are called for in the City of Troy Master Plan.

Alternative Fuel Vehicle Facilities

To receive Prequalified SDP status for alternative fuel vehicle measures, an applicant may propose to do the following:

- INSTALL RECHARGING STATIONS FOR NOT LESS THAN 2.5% OF THE PROVIDED PARKING SPACES.
- INSTALL PRIORITY PARKING FOR HYBRID OR ALTERNATIVE FUEL VEHICLES FOR NOT LESS THAN 5% OF THE PROVIDED PARKING SPACES.

Commuter Accommodations

To receive Prequalified SDP status for commuter measures, an applicant may propose to do the following:

- PROVIDE NON-MOTORIZED PATHWAYS AND BICYCLE AMENITIES THROUGHOUT THE PROJECT BEYOND THOSE REQUIRED BY THE ORDINANCE.
- PROVIDE COMMUTER LOCKERS AND SHOWERS AND SECURE, COVERED BICYCLE PARKING FOR NOT LESS THAN 10% OF THE ESTIMATED STAFF OR RESIDENTS AND 5% OF THE ANTICIPATED CUSTOMERS.
- PROVIDE COVERED SHELTER FOR TRANSIT PASSENGERS ON ESTABLISHED TRANSIT ROUTES.

D. Light Pollution

Purpose:

Light pollution takes many forms, and can have many negative consequences. Simple problems, like trespass of excess light from one property to another, can be a nuisance. Substantial light pollution can create glare that makes night visibility for drivers a challenge. Regional light pollution can limit the ability to see the night sky clearly, and inappropriate light levels have been shown to affect sleep behavior. Further, by reducing unnecessary lighting, there is an energy reduction benefit that, on a widespread scale, can significantly reduce energy demand.

Light Pollution Reduction Measures

To receive Prequalified SDP status for light pollution reduction measures, an applicant may propose to do the following:

- REDUCE PROVIDED LIGHTING BY USING AUTOMATIC DEVICES FOR ALL NON EMERGENCY LIGHTING BY AT LEAST 50% BETWEEN 11 PM AND 5 AM AND HAVE FULL CUTOFF SHIELDING ON ALL FIXTURES TO PREVENT LIGHT TRESPASS.

E. Heat Islands

Purpose:

Heat island effect is when atmospheric temperatures, indoors or outdoors, are artificially increased by elements of the built environment. For instance, a large expanse of asphalt absorbs and slowly releases heat throughout a parking area, where an expanse of grass would have remained cooler and avoided such an “island” of increased heat.

Techniques such as a high-reflectivity roof, sun shades, increased landscaping over a large parking area, or the use of a light, highly reflective pavement material can reduce the heat island effect and help maintain more comfortable temperatures that are closer to the natural condition on a site. These techniques reduce energy demands and naturally preserve comfort for the people who visit or reside in such places.

Heat Island Effect Reduction

To receive Prequalified SDP status for heat island effect measures, an applicant may propose to do the following:

- PLACE A MINIMUM OF 50% OF PARKING UNDERGROUND OR UNDER A STRUCTURE HAVING A ROOF SRI (SOLAR REFLECTANCE) OF AT LEAST 29 OR A STRUCTURE HAVING A GREEN ROOF.
- SHADE 50% OR MORE OF THE SITE HARDSCAPE (PARKING, DRIVES, WALKS, COURTS, ETC., NOT INCLUDING BUILDINGS) WITH ANY OF THE FOLLOWING ALONE OR IN COMBINATION:
 - USE AN OPEN GRID PAVEMENT SYSTEM.
 - LANDSCAPING CANOPY (WITHIN 5 YEARS OF PLANTING).
 - SOLAR ENERGY STRUCTURES.
 - USING A STRUCTURE HAVING A ROOF SRI OF AT LEAST 29 OR A STRUCTURE HAVING A GREEN ROOF.
 - USE HARDSCAPE MATERIALS WITH AN SRI OF AT LEAST 29.
- USE ROOFING MATERIALS WITH AN SRI OF AT LEAST 29 (FOR ROOFS WITH A STEEP SLOPE – GREATER THAN 2:12) OR AT LEAST 78 (FOR ROOFS WITH A LOW SLOPE – EQUAL TO OR LESS THAN 2:12) FOR AT LEAST 75% OF THE ROOF SURFACE AREA.
- USE A GREEN ROOF FOR AT LEAST 75% OF THE ROOF SURFACE AREA.
- USE A COMBINATION OF THE MINIMUM SRI ROOF MATERIALS AND GREEN ROOF MATERIALS FOR AT LEAST 75% OF THE ROOF SURFACE AREA.

F. Water Resources

Purpose:

While the State of Michigan is surrounded by the Great Lakes, most communities obtain their water from groundwater sources. Given the effect of urban development on the

natural recharging of groundwater, there is a benefit in many communities to reduce the amount of water used for everyday activities. Even in Troy, the cost of bringing water in through the regional water network is considerable in terms of the long-term demands placed on the network of underground utilities. By reducing the amount of water wasted in everyday use, the community will extend the useful life of its water resources and the water infrastructure.

Using water efficient landscaping, such as drought tolerant native species, reduces the need for water and maintenance costs. Reducing water use inside a building at the point of consumption is easily achieved through water efficient fixtures. Water recycling is often more involved, but has the added benefit of reducing stormwater quantity, in keeping with other measures within the SDP process.

Water Efficient Landscaping

To receive Prequalified SDP status for water efficient landscaping measures, an applicant may propose to do the following:

- REDUCE WATER CONSUMPTION DEMANDS FOR IRRIGATION BY MORE THAN 50% USING NATIVE SPECIES OVER CONVENTIONAL LANDSCAPING.
- INSTALL IRRIGATION SYSTEMS USING ONLY CAPTURED RAINWATER OR RECYCLED WASTEWATER.

Water Use Reduction

To receive Prequalified SDP status for water use reduction measures, an applicant may propose to do the following:

- REDUCE WATER CONSUMPTION BY 20% OR MORE OVER CONVENTIONAL DESIGN BY USING WATER EFFICIENT TOILETS (DUAL FLUSH, WATERLESS, LOW FLOW, ETC.), LOW FLOW FAUCETS, LOW FLOW SHOWERS, HIGH-EFFICIENCY WASHING MACHINES OR DISHWASHERS, ETC.

Water Recycling

To receive Prequalified SDP status for water recycling measures, an applicant may propose to do the following:

- CAPTURE MORE THAN 50% OF THE SITE'S WASTEWATER FOR NON-POTABLE USES.

G. Renewables

Purpose:

Renewable sources of energy, such as wind, solar, or geothermal, represent cleaner, reliable sources of energy that do not place the same kind of long-term demands on the natural environment that are characteristic of fossil fuels. While not always ideally suited to the climate or condition present in every region or even specific property, renewable sources of energy do represent inexhaustible sources of energy. Solar power, for instance, can generate electricity or provide thermal energy to heat water or even to warm the air inside a building. Geothermal energy takes advantage of the reliable consistent temperatures within the soil beneath our feet. Wind power can enhance the electrical supply without any need for fuel. Other forms of renewable energy production may be proposed, subject to approval by the Committee.

Renewable energy represents a large potential growth area in the economy. By incentivizing the installation of renewable capacity, the City of Troy is also supporting job creation in manufacturing, research and development.

Solar

To receive Prequalified SDP status for solar energy measures, an applicant may propose to do the following:

- PROVIDE ON-SITE SOLAR ENERGY COLLECTORS OR SOLAR THERMAL SYSTEMS TO PRODUCE NOT LESS THAN 10% OF THE SITES ANTICIPATED ELECTRICITY USE AND/OR REDUCE THE LOAD FOR WATER HEATING BY NOT LESS THAN 50% FOR SOLAR THERMAL DEVICES.

Wind

To receive Prequalified SDP status for wind energy measures, an applicant may propose to do the following:

- PROVIDE ON-SITE WIND ENERGY CONVERSION SYSTEMS TO PRODUCE NOT LESS THAN 10% OF THE ANTICIPATED ELECTRICITY USEAGE.

Geothermal

To receive Prequalified SDP status for geothermal energy measures, an applicant may propose to do the following:

- PROVIDE ON-SITE GEOTHERMAL SYSTEM REDUCE THE LOAD FOR BUILDING HEATING AND COOLING BY NOT LESS THAN 50%.

Other

To receive Prequalified SDP status for renewable energy measures not listed here, an applicant may propose to do the following:

- PROVIDE INSTALLED RENEWABLE ENERGY PRODUCTION CAPACITY NOT LESS THAN 10% OF THE ANTICIPATED ELECTRICITY USAGE OR TO REDUCE THE LOAD FOR BUILDING HEATING AND COOLING BY NOT LESS THAN 50%.

4. Definitions

- Alternative Fuel Vehicles - Motorized vehicles that use an energy source other than gasoline, or a combination of gasoline and another form of energy.
- Bicycle Amenities - Services provided that make the use of bicycles more use friendly, such as covered storage, bike racks, pathways etc.
- Brownfield - Abandoned, idle, or under-used industrial and commercial properties where expansion or redevelopment is hindered or complicated by real or perceived environmental conditions (SEMCOG 2008).
- Captured Rainwater - Rainwater collected in rain barrels or cisterns for later use.
- Cisterns - Containers that store large quantities of stormwater above or below ground (SEMCOG 2008).
- Contaminants - Pollutants which have negative effects the natural environment, sometimes being washed away by stormwater into the environment.
- Drought Tolerant - Plants that do not normally require artificial irrigation.
- Glare - An effect of light pollution which causes decreased visibility.
- Greenhouse Gas - A gas which is trapped within the atmosphere creating a heating effect on the environment, called the Greenhouse Effect.
- Green Roof - A rooftop system that may include vegetation, waterproofing, insulation, fabrics, growth media, and other synthetic components allowing the roof to slow the rate of stormwater runoff (SEMCOG 2008).
- Groundwater - Natural water bearing subsurface layers of porous stone, sand, gravel, silt or clay via infiltration (SEMCOG 2008).
- Full Cutoff Shielding - A buffer used to block light from an affected area.
- Hardscape - Paved surfaces such as parking lots, driveways, sidewalks, courts etc. not including buildings.
- Heat Island Effect - When atmospheric temperatures, indoors or outdoors, are artificially increased by elements of the built environment.
- High-Reflectivity Roof - A type of roofing used to decrease the effects of the urban heat island, by reflecting heat that would otherwise be absorbed.
- Impervious Surfaces - A surface that prevents the infiltration of water into the ground such as roofs, streets, sidewalks, driveways, parking lots, and highly compacted soils (SEMCOG 2008).
- Light Pollution - Pollution caused by light, in the form of excess light or the causation for a nuisance.
- Low Impact Design - Site design and stormwater management techniques that

infiltrate, filter, store, evaporate, and detain runoff close to its source, and that result in maintaining a site's pre-settlement hydrology (Troy Zoning Ordinance, 2011).

- Manufactured Wetlands - A man-made wetland used to create more efficient systems of water run-off and retention.
- Native Species - Plants that historically co-evolved with the local ecology, geology and climate (SEMCOG 2008).
- Permeable Paving – Paving that allows liquids to pass through (SEMCOG 2008).
- Prerequisites - The sustainable design measures that must be met before an application can be approved.
- Qualifying Measures - Measures that need to be met in addition to the prerequisites in order for a sustainable design project to be considered.
- Rain Gardens - Landscaping that provides on-site detention, filtering of rainwater, groundwater recharge, and helps reduce runoff volume (Troy Master Plan, 2008).
- Recharging Stations - Stations that can be used to recharge alternative fuel vehicles requiring electricity.
- Renewable Energy Installations – Equipment or structures that are designed to capture energy generated from natural resources such as sunlight, wind, rain, tides, and geothermal heat, which are renewable (naturally replenished).
- SRI (Solar Reflectance Index) - The amount of solar energy reflected off of a surface measured by the Solar Reflectance Index http://eetd.lbl.gov/coolroof/ref_01.htm.
- Stormwater - Water consisting of precipitation runoff or snowmelt (SEMCOG 2008)
- Stormwater Quantity - The amount of stormwater runoff.
- Stormwater Quality - The condition of the stormwater, including the amount of contaminants.
- Swales - A shallow stormwater channel that can be vegetated with some combination of grasses, shrubs, and/or trees designed to slow, filter, and often infiltrate stormwater runoff (SEMCOG 2008).
- Water Efficient Landscaping - Landscaping which effectively processes water in the most efficient manner possible, reducing negative effects of poor stormwater management.
- Water Recycling – The reuse of water from common domestic applications.
- Watershed - The geographic area that drains to a specific watercourse outlet. The watershed for a major river may encompass a number of smaller sub-watersheds that ultimately contribute to their common outlet (SEMCOG 2008).