

Task Force on Environmental Action

Final Report

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INTRODUCTION

This is the final report of the City of Takoma Park's Task Force on Environmental Action (TFEA). Takoma Park strives to be a "sustainable and livable community, with an engaged, responsive, and service-oriented government,"¹ and the City has a long history of progressively addressing environmental challenges through the active engagement of its citizens. In this spirit, the TFEA was convened to review the City's recent experience with promoting environmental sustainability and to make specific recommendations to the City Council for future actions to be taken in the context of the City's recently adopted five-year Strategic Plan.

The Task Force on Environmental Action

The Takoma Park City Council established the Task Force on Environmental Action (TFEA) on July 29, 2009² and subsequently appointed nineteen members to serve as volunteers on the Task Force.³ The group included activists, scientists, attorneys, professors, business owners, writers, and other specialists, all with expertise in aspects of the environment.

The active members of the TFEA are listed in Appendix A. The TFEA was ably supported by numerous city staff members.

The City Council's Resolution establishing the TFEA directed it to:

- Review existing City environmental policies and programs and their effectiveness, identify any gaps, and recommend any changes or enhancements.
- Conduct an initial review of the requirements of the City's Ordinances and recommend any necessary revisions to ensure the furtherance of the City Council's environmental sustainability goal.
- Create and recommend a five-year plan for improving the environmental sustainability of the City government, residents, and businesses. The Council urges that the Task Force prioritize achievement of the largest gain for the smallest investment, reduction of greenhouse gas emissions, and accounting for social justice issues and priorities. The plan should consider vehicle use, fuel use, facility efficiency, purchasing preference for recyclable and green products, use of alternative, less environmentally damaging products, and other policy recommendations.

- Review the City's Local Action Plan (LAP) for Reducing Greenhouse Gas Emissions and recommend revisions that will establish reduction goals that meet or exceed federal, state, county, and Metropolitan Washington Council of Governments' plans.
- Recommend ongoing educational and incentive programs to increase the community's awareness of actions it can take to reduce greenhouse gas emissions, reduce use of resources, enhance the natural environment, and improve water quality.
- Recommend a series of benchmarks and key indicators to provide an appropriate means of measuring progress made by the City and the community to improve Takoma Park's environmental sustainability.
- Recommend a structure for an ongoing volunteer committee or (committees), working group(s) or other entities to advise the City Council, monitor progress on implementing the plans, conduct educational programs and outreach, or perform other tasks associated with environmental sustainability at the request of the City Council.⁴

The TFEA was asked to report its findings and recommendations to the City Council by March 31, 2010; at the request of the TFEA that timeline was later extended to April 30, 2010.

The TFEA convened for the first time on October 21, 2009, and met approximately twice a month thereafter. To facilitate our work, the TFEA was divided into six subcommittees: climate change; buildings and energy use; water and stormwater; transportation and fuel use; habitat and greenspace; and waste. The composition of the subcommittees is provided in Appendix A. These subcommittees met independently to develop the respective recommendations in each of their areas. The subcommittees reported back to the TFEA periodically, and the recommendations included in this report have been reviewed and adopted by the whole TFEA. Recommendations that did not receive support of a majority of the TFEA are included in Appendix C.

Report Structure

This report is a culmination of seven months of work studying issues that affect Takoma Park and beyond.

After a review of the City's existing environmental policies and programs, the main body of the report centers around specific

recommendations that the TFEA believes should be implemented within the next five years. Recommendations were developed for each of nine areas. The nine topic areas are presented alphabetically and include: (1) Air quality; (2) Buildings; (3) Climate Change; (4) Energy; (5) Habitat; (6) Stormwater; (7) Transportation; and (8) Waste. A select number of recommendations are first highlighted in Chapter Two as “high priority recommendations” to focus the Council’s immediate attention on those recommendations believed by the TFEA to be the most important in each of the nine topic areas.

The topic areas are clearly inter-related and some overlap can be expected between the chapters. In addition, the nine topic areas do not necessarily cover all of the critical sustainability issues facing the City in the future. For example, the TFEA discussed the importance generally of individual choices in achieving sustainability. How many children you have; what type of car, if any, you drive; whether you are an omnivore, a vegetarian or a vegan are all examples of individual (and personal) choices that can have a profound collective effect on environmental sustainability. The City could choose to promote more sustainable choices regarding consumption and population among Takoma Park’s citizens, but recommendations addressing these are not explicitly included in this report.

The Decision Matrix

For each of the topic areas covered by this report, the TFEA lists specific recommendations that could be developed and implemented during the next five years. Each of the recommendations was evaluated according to a matrix of criteria developed by the TFEA and explained below. Even with the matrix, however, comparisons between recommendations is an inexact methodology.

Recommendation. Each recommendation is described briefly.

Type of Benefit. For each recommendation, the types of benefits that could be gained from implementing the recommendation are identified. The types of benefits were grouped and coded according to the following categories/environmental areas: Air = Air; Bld = buildings; GHG = greenhouse gas mitigation; Hab = habitat; NRG = energy; Public Health Benefit = PH; Resilience for the community = Res; Social Benefit = Soc; Strm = stormwater; Trns = transportation; Wst = waste; and All = effects on all environmental media areas. Many recommendations have more than one category of benefit.

Degree of Impact. Each recommendation’s degree of impact is indicated (i.e., high, medium or low). Where one

recommendation has more than one type of benefit, degree of impact may be indicated for each category of benefit.

Geographic Impact. The geographic scope of each recommendation’s expected impact is indicated and coded according to whether the impact is primarily: Ward; City; County; State; Regional; National; or Global.

Costs. The costs of each recommendation were evaluated. The matrix differentiates between costs to the city and other costs. In general, limited effort was made to quantify the precise costs of a recommendation, but rather the costs are categorized generally as high, medium or low relative to other recommendations

Feasibility. The feasibility of each recommendation was evaluated and coded as high, medium or low relative to other recommendations. This criterion also reflected whether technologies or approaches had been implemented successfully in similar contexts or whether the recommendation included new or untested approaches.

Fit. Each recommendation was evaluated as to how it fit within the applicable county or state policy framework. Each recommendation is coded with whether it aligns with or exceeds similar county, regional, or state goals.

Timeframe. The relative timeframe for each recommendation is included in the matrix, reflecting how long it will take to implement fully. The timeframe is categorized as: short (0-2 years), medium (2-5 years) and long-term (periods beyond 5 years).

History of Takoma Environmentalism

In 1883 B.F. Gilbert purchased 100 acres of land in Washington DC, and Maryland. His goal was to create a “sylvan suburb of the National Capitol” and it was one of the first three railroad-accessible suburbs in the DC area. His initial development was successful and he bought an additional 1000 acres of nearby land in 1886. The site was chosen for its healthful qualities.⁵

It is at 350 feet in elevation, high enough to avoid the malaria and mosquitoes that prevailed in Washington DC at the time. It also had a clean water supply and access to Sligo Creek. By 1907, a sanitarium and two hotels were built to take advantage of the healthy environment. Early residents included numerous federal government workers, many of whom were horticulturalists. Takoma Park resident B.Y. Morrison, a former director of the National Arboretum and an azalea developer,

was the inspiration for the City's decision to name itself "Azalea City" in the early 1960s.⁶

As a natural respite from crowded downtown Washington, with easy access via railroad, Takoma Park has always represented a beautiful environment with trees, fresh water, and a natural environment. Early Takoma Park environmental action included efforts to stop the Northwest Freeway that threatened the community's existence, establishing a recycling program in 1987, creating a citizen environmental advisory committee in 1992, and developing a Local Action Plan for Reducing Greenhouse Gas Emissions in 2000. For more information on Takoma Park's environmental efforts and the Committee on the Environment's work, please see Appendix G.

5-Year Plan

Council directed the TFEA to "create and recommend a five-year plan for improving the environmental sustainability of the City government, residents, and business." This Final Report constitutes the TFEA's 5-Year Plan⁷ for improving environmental sustainability. It also includes recommendations for reducing greenhouse gas (GHG) emissions, making a separate LAP unnecessary.

CITY OPERATIONS & PROGRAMS



Introduction

This chapter provides general recommendations regarding sustainability and implementation of the five-year plan, and specifically focuses on City operations and programs.

A number of TFEA recommendations affected more than one environmental area. Additionally, the TFEA determined that several general recommendations should be made to help ensure effective implementation of this report.

Experience with the 2000 Local Action Plan for Reducing Greenhouse Gas Emissions (LAP) suggests that the City Council must ensure availability of sufficient staffing, budgetary resources, and other commitments to ensure effective 5-Year Plan implementation

Staffing

The City should commit sufficient staff, including hiring a Sustainability Coordinator as soon as possible to coordinate the city's efforts to reduce GHG emissions, implement the five-year plan, and achieve environmental objectives more generally

BACKGROUND

The City needs to commit sufficient staffing to support implementation of the recommendations found in this report and the associated local action plan to reduce greenhouse gas (GHG) emissions. At the least, this will require one full-time "sustainability coordinator" who should be hired as soon as possible to oversee implementation of these recommendations, to work with future volunteer

citizen committees, and to ensure the City remains a leader in sustainability into the future. Specific tasks for the Sustainability Coordinator are outlined in the report. Furthermore, the need for additional staff and paid consultants should be reviewed every two years.

Recommendation	Type of Benefit ¹	Degree of Impact ²	Geographic Impact ³	Costs (City/Others) ²	Feasibility ²	Fit with Other Applicable Plans ⁴	Timeframe ⁵
Staffing: Commit sufficient staff, including hiring a Sustainability Coordinator by the end of 2010 to coordinate the City's efforts to reduce GHG emissions, implement the five-year plan, and achieve environmental objectives.	All	High	City	High	Medium	High	Short
Budget: Commit sufficient budget to implement the recommendations in this plan.	All	High	City	High	Medium	High	Short
Implementation Plan: Develop a plan by end of 2010 to implement each plan recommendation. The plan should identify a timeline for implementation, the person responsible for implementing it, source of funding, and indicators for effectively monitoring and evaluating implementation of the recommendation.	All	Medium	City	Low	High	High	Short
Training and Education of City Staff. The City shall create a City employee sustainability education program to ensure all City employees have knowledge about relevant best practices in sustainability.	All	Medium	City	Low	High	High	Short
Explore new revenue streams for financing sustainability.	All	High	City	Low	High	High	Short
Sustainability Website. Design and maintain an attractive, effective sustainability website for the City. The website should facilitate communication between the City and the community, and act as a central sustainability repository.	All	Medium	City	Low	High	High	Short

- (1) Environmental media area impacted by recommendation: Air = Air; Bld = buildings; GHG = greenhouse gas mitigation; Hab = habitat; NRG = energy; Public Health Benefit = PH; Resilience for the community = Res; Social Benefit = Soc; Strm = stormwater; Trns = transportation; Wst = waste; and All = effects on all environmental media areas.
- (2) Graded relative to other recommendations.
- (3) Geographic impacts can include Ward; City; County; Regional; National; and Global.
- (4) Degree of alignment or fit with other County, State or Regional goals/targets/activities.
- (5) Short (0-2 years), Medium (2-5 years), or Long-term (5+ years).

DETAILED EXPLANATION OF RECOMMENDATION

Experience with the previous Local Action Plan, as well as with other cities, shows that reliance on existing staff and volunteer committees does not allow Takoma Park to maintain its position as a leader in sustainability. The existing City staff has done fabulous work in implementing those aspects of sustainability that fall within their responsibilities. Nonetheless, an effective, sustained approach to sustainability requires a consistent full-time focus on sustainability issues. The City thus needs a sustainability coordinator whose primary task is

to assist Takoma Park as a whole, including our residents and businesses, to move toward sustainability.

Given current fiscal constraints, we recognize that the City is undergoing one of its toughest budgetary cycles in years and may be cutting back on city services. This is a five-year plan, however, and we believe the budget situation will improve and allow for the employment of a sustainability coordinator within the next few years. The City Council needs to show its commitment to sustainability by ensuring that there is a full-time staff person dedicated to sustainability,

TYPE OF BENEFIT

This recommendation brings overarching benefits to all aspects of sustainability.

DEGREE OF IMPACT

This recommendation has high impact, because without adequate staffing the City will not succeed in implementing effectively many recommendations in this plan. The impact of this recommendation is indirect because its impact on sustainability results from the successful implementation of the other recommendations. Moreover, professional staffing for sustainability in the City will allow the City to work over time to identify new opportunities, reflect emerging trends, practices and technologies, and take advantage of future opportunities for funding and strategic partnerships. Professional, dedicated staff will also allow for more effective and focused use of volunteer advisory committees.

GEOGRAPHIC IMPACT

City-Wide, although successful implementation of this plan will have benefits beyond the City as reflected in each of the recommendations.

COST (CITY/OTHERS)

Hiring and supporting a new position has a relatively high cost to the City. As noted above, having a dedicated sustainability coordinator will result in more value being gained from volunteer citizen activities.

FEASIBILITY

Hiring a new sustainability coordinator is feasible from most perspectives. Such positions are increasingly common and the City would likely have a wide range of applicants for such a position with the requisite skills and experience. The primary obstacle is one of costs. We recognize that current budgetary constraints make such expenditure even more difficult, but we believe that the City's budgets will increase in the future and that hiring a professional sustainability coordinator should be a high priority when

they do. Over the next few years, we thus believe hiring a coordinator has medium feasibility.

FIT WITH OTHER APPLICABLE PLANS (CITY, COUNTY, STATE, REGION)

This recommendation fits well with other plans, because providing sufficient staffing to address the recommendations in this plan will generally allow Takoma Park to meet or exceed sustainability requirements of the county, state or region.

TIMEFRAME

Short, in that the recommendation is to hire a sustainability coordinator as soon as possible, but the impacts will be spread over time as reflected in the various recommendations in the report.

SECONDARY IMPACTS

None.

QUESTIONS THAT REMAIN TO BE INVESTIGATED BY CITY

None.

Budget

The City must commit sufficient budget resources to implement the recommendations in this plan.

DETAILED EXPLANATION OF RECOMMENDATION

Although many of the recommendations in this report will not require additional direct expenditures by the City, some will. One of the most important expenditures is to support the hiring of a dedicated sustainability coordinator to oversee the implementation of this plan.

In order for the City to better understand the relative costs of each recommendation, the report includes an estimate of the costs to the City, categorized as high, medium or low. This categorization estimates costs relative to other TFEA recommendations. The City will need to more specifically study actual implementation costs to ensure adequate budgetary resources are made available.

TYPE OF BENEFIT

This recommendation brings overarching benefits to all aspects of sustainability.

DEGREE OF IMPACT

This recommendation has high impact, because without adequate budgetary resources, the City will not succeed in implementing effectively many recommendations in this plan. The impact of this recommendation is indirect because its impact on sustainability results from the successful implementation of other recommendations.

GEOGRAPHIC IMPACT

City-wide impact, although successful implementation of this plan will have benefits beyond the City as reflected in each of the recommendations.

COST (CITY/OTHERS)

Ensuring adequate budgetary resources has a relatively high cost to the City.

FEASIBILITY

Ensuring adequate budgetary resources is feasible from most perspectives. We recognize that current budgetary constraints make such expenditures even more difficult, but we believe that the City's budgets will increase in the future and that budget resources for sustainability should be a high priority when they do. Moreover, budget expenditures can be prioritized among the recommendations over the next few years and additional funds from grants or other sources can be used to supplement City budgets. We thus believe providing budgetary resources is highly feasible.

FIT WITH OTHER APPLICABLE PLANS (CITY, COUNTY, STATE, REGION)

This recommendation fits well with other plans, because providing sufficient budgetary resources to address the recommendations in this plan will generally allow Takoma Park to meet or exceed sustainability requirements of the county, state or region.

TIMEFRAME

The TFEA recommends identifying adequate budget resources throughout implementation of this 5-Year Plan, but the impacts should be spread over time as reflected in the various recommendations in the report.

SECONDARY IMPACTS

None.

QUESTIONS THAT REMAIN TO BE INVESTIGATED BY CITY

The City will have to estimate the costs as part of developing the implementation plans for each recommendation as it is implemented.

5-Year Plan Implementation

By the end of 2010, the City should have developed an implementation plan for each recommendation in this strategic plan. For each recommendation, the plan should identify a timeline for implementation, the person responsible for implementing it, source of funding, and indicators for effectively monitoring and evaluating implementation of the recommendation.

BACKGROUND

Plans are inspiring and necessary. But without an accompanying roadmap identifying how the plan is to be implemented, plans are often meaningless. To make this strategic plan a meaningful, living document, we strongly recommend the City develop an implementation plan for each TFEA recommendation.

DETAILED EXPLANATION OF RECOMMENDATION

For each recommendation, City staff, potentially with the assistance of a working group of volunteer residents, should develop an implementation plan that identifies for each recommendation:

- Timeline for implementation with benchmarks if the timeline is longer than one year;
- Person in City government responsible for implementing it;
- Source of funding, if needed, to implement;
- Roadblocks or obstacles to implementation, if already identified; and
- Indicators for monitoring and evaluating implementation of the recommendation.

TYPE OF BENEFIT

This recommendation brings overarching benefits to all aspects of sustainability.

DEGREE OF IMPACT

This recommendation has significant impact, in that failure to do it may result in failure to implement the entire strategic plan. However, its impact is indirect because it results from the implementation of the other recommendations in the plan. Therefore, we score it as Medium.

GEOGRAPHIC IMPACT

City-Wide at least. If implementation is successful, other areas will benefit.

COST (CITY/OTHERS)

Relatively low cost to the City, although some staff time required. Significant volunteer input could greatly assist in containing costs.

FEASIBILITY

Creating a basic implementation plan should be highly feasible.

FIT WITH OTHER APPLICABLE PLANS (CITY, COUNTY, STATE, REGION)

No issues with other plans. In fact, the 5-Year Plan could be beneficial to other cities if Takoma Park's plan becomes a model.

TIMEFRAME

Short, in that the recommendation is to be accomplished in 2010.

SECONDARY IMPACTS

None.

QUESTIONS THAT REMAIN TO BE INVESTIGATED BY CITY

Who within City government and what volunteer forces, if any, remain to be identified and confirmed. Allocation of staff time and resources still has to be determined.

Training & Education of City Staff

The City should create a City employee sustainability education program to ensure all City employees have knowledge about relevant best practices in sustainability

BACKGROUND

In order for municipalities to make appropriate consumption-reduction goals, increase sustainable practices within the City departments, and advise and provide appropriate relevant services to residents, City employees will need training on "sustainability at work and at home" along with specific training in appropriate fields.

SUMMARY OF PROBLEM

Currently, the City is interested in becoming a leader in sustainability but does not have a training program in place to support this goal. Since the pace of both sustainability and green initiatives is increasing, and because it is not realistic to expect the City employees to be experts in all areas, the City needs to identify and support training in all aspects of sustainability and increase local capacity for addressing this need. This will help to establish and meet sustainability goals in City departments as well as in the City overall.

For example, staff further trained in recycling, green energy, alternative pest management, and other emerging sustainability issues will allow for significant, ongoing improvements in the City's environmental performance over time.

TYPE OF BENEFIT

Benefits in all areas because a highly trained staff can assist in fulfilling other recommendations found throughout this report.

DEGREE OF IMPACT

City employees will be the primary beneficiaries, but also community members, groups, and businesses that work with the City staff or use their services; and neighboring communities and municipalities.

GEOGRAPHIC IMPACT

City-wide impacts expected. Potentially broader impacts if City employees become mentors or educators to other cities and area groups.

COST (CITY/OTHERS)

Relatively low cost to the City. Costs could be further reduced by utilizing previously trained City-staff members to train other City employees.

FEASIBILITY

Very high feasibility since City has complete control over training its own employees.

FIT WITH OTHER APPLICABLE PLANS (CITY, COUNTY, STATE, REGION)

No issues with other plans. In fact, environmentally-trained staff could be beneficial to other plans if Takoma Park are available to train other area governments, businesses, and groups.

TIMEFRAME

Immediate.

SECONDARY IMPACTS

Staff members who are trained can be used to train citizens in the areas of expertise, as well as train other staff members. They can become regional experts, available to advise other municipalities or groups.

Educating City employees can contribute to meaningful community engagement.

QUESTIONS THAT REMAIN TO BE INVESTIGATED BY CITY

A process to identify both the general workshops on sustainability at work and at home that would be appropriate for all staff, as well as specific training that would be necessary and appropriate for certain staff (and prioritizing who gets which training and when).

LIST OF REFERENCES

Austin Climate Plan:
<http://www.coolaustin.org/acpp.htm>

Berkeley Climate Plan:
<http://www.berkeleyclimateaction.org>

Funding Recommendations

City should explore new revenue streams for financing sustainability.

BACKGROUND

Funding will be needed for many TFEA recommendations. A task force of City residents could be established with at least one City staff member to coordinate efforts and ensure consistency with City goals. This task force would investigate, identify, quantify and develop specific recommendations for augmenting existing City revenue.

SUMMARY OF PROBLEM

Some specific recommendations come with built-in mechanisms for funding. Only a few encourage a net gain that could be applied to other uses. Without funding, many recommendations will not be implemented.

Each revenue-stream recommendation will need its own research and justification to ensure appropriateness and legality.

Some specific suggestions discussed in TFEA meetings included:

- City-run composting facility that would sell quality compost products to address shortage of facilities and growing need in that area;
- a potential 0.1% Excise/Sales Tax on real estate in the City to be devoted exclusively to green building/energy efficiency improvements and/or allocation of dedicated percentage from existing property tax stream for residential and commercial green building improvement low interest loans;
- City-run green power utility that could sell excess production or start a program to lease roof tops for production of solar energy;
- encourage Takoma Park residents to use less fossil fuels and reduce car travel by levying a fee-per-car owned by each resident (in addition to, or in exchange for, the parking permits currently in use); and
- trained City staff could be utilized to train other government employees from other municipalities if we developed a core competency.

TYPE OF BENEFIT

Overarching benefits to the potential for fulfilling recommendations that require resource support for accomplishment of the goal.

DEGREE OF IMPACT

Identification and securing of funding streams to match recommendations will impact the City's ability to meet its goals across the board.

GEOGRAPHIC IMPACT

City-wide impacts expected with potentially broader impacts if funding extends to the County, for example.

COST (CITY/OTHERS)

Relatively low cost to research and brainstorm with the support of a volunteer task force. Implementation costs will depend on regulatory frameworks and established policies. Net benefit to City budget, but potential impacts to entitlements on which the fees fall.

FEASIBILITY

Ranging from low to high, depending on regulatory frameworks, creativity of ideas, and existing policies.

FIT WITH OTHER APPLICABLE PLANS (CITY, COUNTY, STATE, REGION)

See above.

TIMEFRAME

Immediate.

SECONDARY IMPACTS

Could lead to innovative solutions to funding issues that typically plague recommendations for sustainable initiatives in this current downturned economic climate.

QUESTIONS THAT REMAIN TO BE INVESTIGATED BY CITY

See above.

Outreach: Sustainability Website

The City should design and maintain an attractive, effective sustainability website for the City of Takoma Park. The website will facilitate communication between the City and the community, and act as a central repository of information and resources on sustainability activities.

BACKGROUND

A website is a relatively simple way to facilitate communication and increase the visibility of Takoma Park's sustainability initiatives. Sustainability or climate action websites are common among other environmentally-progressive municipalities, including ones of a similar size to Takoma Park. Some examples of model websites are given in the references below.

DETAILED EXPLANATION OF RECOMMENDATION

The City should designate staff time, or hire a skilled consultant to design and maintain a comprehensive sustainability website for Takoma Park. The website might include:

- (1) Information on the City's environmental goals, benchmarks and progress meeting those goals;
- (2) A community events calendar for sustainability-related activities;
- (3) Relevant news stories or announcements;
- (4) Homeowner resources for improving home energy efficiency, including a centralized resource about government (city/county/state/national) energy efficiency incentive and loan programs;
- (5) A listing of local green businesses and green jobs; and
- (6) A community climate action portal (see Climate recommendation #6).

TYPE OF BENEFIT

The benefits of this recommendation are indirect, but some impact would be expected for all aspects of sustainability that are included on the website (GHG reduction, energy, habitat, etc.). Some other positive impacts might result if the website promotes Takoma Park as a "green community" and attracts more green businesses to the City.

DEGREE OF IMPACT

The impact is medium. The benefits are indirect, but could be broad-reaching if the website is effective.

It's important that the new website deviate substantially from the existing City website. The new website should utilize web-standards and be compatible with a broad variety of computers, web browsers and operating systems. The City would benefit from embracing new technologies to reach younger audiences.

The current City website design is old, uninspiring, and would be ineffective for sustainability efforts. The new website should inspire and inform.

GEOGRAPHIC IMPACT

The geographic impact would be primarily local, by providing information to Takoma Park residents. However, a larger regional impact would be possible if other cities followed Takoma Park's lead.

COST (CITY/OTHERS)

The cost to the City would be relatively low, but not zero. It would include an upfront cost associated with designing and developing the website, and then an ongoing cost for paid staff time to perform regular postings and maintenance.

FEASIBILITY

The feasibility is high. Other communities have implemented sustainability websites with success, providing many model websites to work from.

FIT WITH OTHER APPLICABLE PLANS (CITY/COUNTY/STATE/REGION)

The website should be linked with the website for the Montgomery County sustainability initiative.

TIMEFRAME

The first step, to determine the desired content of the website, should begin soon. Development of the website could occur in stages. Website maintenance and updates will be ongoing.

SECONDARY IMPACTS (POSITIVE AND NEGATIVE)

This recommendation covers a broad range of impacts

QUESTIONS THAT REMAIN TO BE INVESTIGATED BY CITY

None.

LIST OF REFERENCES

www.berkeleyclimateaction.org (Berkeley)

www.coolaustin.org (Austin)

www.beclimatesmart.com (Boulder)

<http://www.aspenpitkin.com/Living-in-the-Valley/Green-Initiatives/Canary-Initiative/> (Aspen)

HIGH PRIORITY RECOMMENDATIONS

The Task Force on Environmental Action identified a number of high priority actions that we believe should be taken in the immediate future and whose implementation will have the greatest benefit for our community, climate, energy use, water, air and natural habitats.

We believe that these are the actions that have the highest priority and deserve immediate attention from the City Council and the community. More details on each high-priority recommendation are included in each substantive chapter of the TFEA report.

Within the top three ranked recommendations were two “Overarching” recommendations which are detailed in the preceding City Operations chapter. Given their high ranking and importance, they are being highlighted here as well as some of the highest priority next steps for the city and council to take.

Overarching

STAFFING

The City should commit sufficient staff, including hiring a Sustainability Coordinator as soon as possible to coordinate the city’s efforts to reduce GHG emissions, implement the five-year plan, and achieve environmental objectives more generally

BUDGET

The City must commit sufficient budget resources to implement the recommendations in this plan.

Energy and Climate Change

PURCHASE STREET LIGHTS FROM PEPCO

The City should finance the acquisition of the City’s approximately 1,700 street lights, perhaps through a public-private partnership. City ownership is estimated to save 30% to 50% per year in electricity costs which could be used to finance upgrades in street light energy efficiency, thus reducing energy use and creating additional cost savings.

GREENHOUSE GAS INVENTORY AND MONITORING PLAN

A greenhouse gas (GHG) inventory is needed to test the degree to which the City is meeting its commitments under the 2000 Local Action Plan and the U.S. Conference of

Mayors Climate Protection Agreement and because a detailed inventory will allow the City to implement an informed mitigation strategy that reduces emissions from sectors and sources for which the inventory shows the greatest impact. Hundreds of other ‘green’ communities across America have already institutionalized this action.

SHARED ENERGY EFFICIENCY UPGRADES AND RENEWABLE ENERGY PURCHASING

By 2012, the City should implement a financing mechanism (e.g. A public/private partnership) that enables cost sharing and discounts on the installation of energy efficiency upgrades via an energy performance contractor. The City should also negotiate a power purchasing agreement for purchase of renewable energy through a third party supplier and county subsidies. We believe this was one of the highest impact climate recommendations in the 2000 Takoma Park Local Action Plan, but we found no evidence that the City took action upon it.

ESTABLISH LANDLORD INCENTIVES FOR BUILDING IMPROVEMENTS

Existing city policy already allowing rent increases based on amortized costs of capital improvements to rental units should be amended to allow additional increases in rent for improvements that reduce the carbon footprint of rental units. Additional energy retrofit capital improvements should be allowed in the program and rent increases should be tied to anticipated renter energy savings.

Waste

REWARDS FOR RECYCLING

The City should establish a “rewards for recycling” program such as that in use in Tacoma, Washington, by implementing a charge for garbage disposal while providing an extensive free recycling program. Currently Takoma Park residents can throw away as much trash as they want at no charge. There is no incentive to minimize waste generation, and no incentive other than a moral one to recycle. Implementing a simple volume-based system is the easiest way to incentivize recycling, minimize waste, and raise money for the Takoma Park waste management program.

HOUSEHOLD ORGANIC WASTE

The City should begin collection and composting all organic household waste and evaluate how the sale of compost could be used to create revenue for the City.

Water Quality

STORMWATER RETROFIT PROJECTS

The City is already undertaking and should continue innovative projects that reduce stormwater runoff funded with an annual fee charged to residents and other funding. The City should expand this program and focus on reducing runoff from large impervious areas within the City. The City should also establish a list of future retrofit projects, ranked in order of severity of their impact on Sligo Creek and other local waterways.

Transportation

TRAFFIC FLOW IMPROVEMENTS

Traffic on City and State roads significantly reduces the quality of life in our community and contributes greenhouse gas pollution, ozone, and particulate emissions that affect resident health. We recommend that the City and State begin implementation of the 2009 'charrette' traffic flow recommendations to construct a roundabout in Takoma Junction. The State should adjust traffic light timing in ways that would reduce traffic delays on roads through the City.

Air Quality

SMALL GAS-POWERED ENGINES

The City should pass a ban on the use of fossil fuel-powered leaf blowers and implement an outreach campaign to educate residents about the pollution caused by small two-stroke engines including edgers, trimmers and chainsaws and fund or coordinate trade-in programs for gas-powered lawnmowers and other equipment. Doing so would reduce ozone pollution.

Habitat

INCREASE TREE PLANTING

The City's highly successful program of planting native trees on public rights of way and other public property should be continued, with expanded planting sufficient to make New Hampshire Avenue and University Avenue tree-lined boulevards. The City should continue to support and advertise a discounted tree planting program for private property owners, especially encouraging planting in areas that create habitat, reduce runoff or reduce home energy use.

AIR QUALITY

For both environmental and cost reasons, the city should minimize its use of all gasoline-powered equipment in caring for our public spaces and should actively encourage all residents to do the same in their own environments. Specifically, the TFEA recommends that the City institute a ban on the use or sale of gas-powered leaf blowers, to become effective in a year. It should couple this regulation with education about the pollution caused by all gas-powered two-stroke engines (used in edgers, trimmers and chain saws) and support trade-in programs for lawnmowers and other equipment. The City should lead by example and stop using gas-powered leaf blowers as a first

temperatures. Ground-level ozone pollution, in particular, is a continuing problem in Takoma Park and the greater Washington metropolitan area. As COG has stated: “[o]f the six major air pollutants for which ambient air quality standards have been established under the Clean Air Act, the pollutant that has posed the most prevalent and perplexing problem for the Washington metropolitan area is ozone, a principal component of “smog.” See COG draft State Implementation Plan, May 2007

The area's ozone level frequently violates federal standards. In 2004, EPA designated the metropolitan Washington region as

a moderate nonattainment area for the 8-hour ozone standard. The region has a deadline of June 15, 2010, to meet the standard.

Recommendation	Type of Benefit ¹	Degree of Impact ²	Geographic Impact ³	Costs (City/Others) ²	Feasibility ²	Fit with Other Applicable Plans ⁴	Timeframe ⁵
Prohibition on use of gasoline-powered leaf blowers	Air, Habitat, PH	Medium/High	City	Low/Low	High	Exceeds	Short
Reduce use of two-cycle and other gasoline-powered engines through education and outreach, and trade-in programs	Air, Habitat, PH	Medium/High	City	Low/Low	Medium/High	Exceeds	Implement: Medium Complete: Ongoing
Enact and enforce strict anti-idling law	Air, PH	Low/Medium	City	Medium/High	High	Exceeds	Short
Clearly ban open burning by adopting Montgomery County language	Air, Habitat, PH	Low	City, other jurisdictions	Low	High	Align w/ MoCo	Short

- (1) Environmental media area impacted by recommendation: Air = Air; Bld = buildings; GHG = greenhouse gas mitigation; Hab = habitat; NRG = energy; Public Health Benefit = PH; Resilience for the community = Res; Revenue raising = Rev; Social Benefit = Soc; Strm = stormwater; Trns = transportation; Wst = waste; and All = effects on all environmental media areas.
- (2) Graded relative to other recommendations.
- (3) Geographic impacts can include Ward; City; County; Regional; National; and Global.
- (4) Degree of alignment or fit with other County, State or Regional goals/targets/activities.
- (5) Short (0-2 years), Medium (2-5 years), or Long-term (5+ years).

step towards taking a more sustainable strategy for our parks and other open spaces.

Air Pollution

The US Environmental Protection Agency (EPA) regulates air pollutants under the Clean Air Act, with states and local governments being given substantial responsibility to meet air quality standards. In this regard, Takoma Park is part of the Greater Washington Metropolitan Area, which is represented by the Metropolitan Washington Council of Governments (COG), an association of twenty-one cities and counties – including Washington, D.C., Takoma Park and Montgomery County.

Among the pollutants regulated by EPA are ozone (O₃), particulate matter, and nitrogen oxides. Small engines also are regulated by EPA. Lawnmowers, chain saws, edgers, leaf blowers and other equipment are subject to emissions regulations issued by EPA.

State and federal environmental agencies can rightly report that air quality has improved since passage of the 1972 Clean Air Act. But those gains are being threatened by a number of factors: growing population and increased development, congested roadways, and warmer

COG submitted a draft State Implementation Plan in May 2007 outlining how the region planned to meet the limit that was then in effect – 0.08 parts per million, or more accurately, 84 parts per billion, considered equal to 0.08 ppm (sources: MWCOG draft SIP, May 23, 2007; EPA final rule, July 18, 1997). The EPA has subsequently proposed even tighter standards, which if adopted will likely require amendments to the COG plan.

Computer models predict that VOCs in the atmosphere would increase by 6.6 percent in 2010, and nitrogen oxides an additional 7.5 percent. According to the Washington Post, "The two pollutants contribute to unhealthy levels of ground-level ozone that on Code Red days prompt public officials to advise the elderly, children and people with respiratory or heart problems to remain indoors."

Data from a local monitoring station confirm how difficult the task will be. The device, which sits atop Takoma (D.C.) Elementary School on Piney Branch Road, measures both ozone and nitrogen oxides. In 2007, the average of the 10 highest readings was 82.3 ppb; in 2008 it was 76.8. These data indicate noncompliance with current standards; given that tighter standards are expected, coming into compliance will be even more difficult.⁸

The numbers for nitrogen oxides at Takoma Elementary are more encouraging. For the last few years they've been consistently in the 50-60 ppb range, well below the 80-100 ppb levels contemplated in a new proposal from EPA. Even if NO_x, measured on its own, is not likely to exceed the future federal standard, it still will contribute to higher ozone levels. In addition, airborne NO_x contributes one-third of the nitrogen loading of the Chesapeake Bay.

Moreover, urban air pollution is also likely to worsen in the future due to climate change. . According to a report issued by the Intergovernmental Panel on Climate Change (page 94):

"A warmer climate is projected to increase the natural emissions of [Volatile Organic Compounds], accelerate ozone formation, and increase the frequency and duration of stagnant air masses that allow pollution to accumulate, which will exacerbate health symptoms.

Increased temperatures and water vapor due to human-induced carbon dioxide emissions have been found to increase ozone more in areas with already elevated concentrations, meaning that global warming tends to exacerbate ozone pollution most in already polluted areas," the report said. "Under constant pollutant emissions, by the middle of this century, Red Ozone Alert Days (when the air is unhealthy for everyone) in the 50 largest cities in the eastern United States are projected to increase by 68 percent due to warming alone."

At the same time, the negative health effects of polluted air are increasingly well documented. The National Research Council recently concluded in a March 2008 report that "short-term exposure to ambient ozone is likely to contribute to premature deaths." According to the report:

"Human chamber and toxicologic studies have yielded strong evidence that short-term exposure to ozone can exacerbate lung conditions, causing illness and hospitalization, and can potentially lead to death. The available evidence on ozone exposure and exacerbation of heart conditions, which is less abundant, points to another concern. Epidemiological studies have also found that exposure to ozone is associated with adverse lung and heart effects."

"On the basis of available evidence, the committee concludes that deaths related to exposure to ozone are not restricted to people who are at high risk of death within a few days. For example, a recent study of data collected from several U.S. cities reports that short-term ozone exposure is likely to contribute to

shortening life and not only among people who are near death."

Other studies have calculated the health – and therefore, monetary -- benefits that would occur with decreased ozone levels. Research performed for EPA in 2004, for example, concluded that the economic benefits of achieving the federal standard were between \$4.9 billion and \$5.7 billion per year. Nearly a million school days would not be lost, and approximately 5,000 people would not die prematurely.

Small Engines

The City should propose phasing out the use of gas-powered leaf blowers in Takoma Park and encourage resident to use less polluting lawn-care equipment (focusing on two-cycle engines used in edgers, trimmers, and chainsaws). Included in the City's outreach should be education about the negative health effects that can result from using the equipment

EPA has issued regulations governing how much pollution can be emitted from a variety of machines powered by small engines: walk-behind and riding mowers, leaf blowers, chain saws, trimmers and edgers, among others. Lawnmowers are run by four-stroke engines, but virtually all backpack and handheld leaf blowers, edgers and chain saws are powered by 2-stroke engines, which are inherently less efficient and therefore, more polluting per gallon of fuel used than lawn mowers. For example, an Andreas Stihl hand-held blower emits 63.38 grams of hydrocarbons and NO_x per kilowatt hour of operation. Compare that to a Briggs and Stratton walk-behind lawnmower, which emits 10.95 g/kwh. The leaf blower's engine is rated at 0.88 kw, the lawnmower's at 2.9 kW. In other examples, one model of a Honda walk-behind lawnmower is rated at 13.54 g/kWh, a model of a Kawasaki walk-behind mower is 10.16, but a Husqvarna backpack blower is 67.46, a Husqvarna chainsaw is 133.7, and a Husqvarna hedge trimmer is 231.54.

How many machines are out there? EPA estimates that in Montgomery County, there are 138,169 4-stroke lawn mowers and 26,521 2-stroke blowers. Other 2-stroke machines in the county include about 69,000 trimmers/edgers/brush cutters and 26,500 chain saws (less than 6 HP)(Data provided by EPA using its Nonroad Engine Population Estimate model; requested by TFEA.]. Extrapolating from population, admittedly a crude measure, Takoma Park contains an estimated 1,243 edgers/trimmer, 594 leaf blowers and 477 chain saws (2,314 2-stroke machines in total). That is in addition to the 2,900 lawn mowers.

Recommendations

The TFEA recommends a prohibition on the use of gas-powered leaf blowers as a significant first step toward:

- (1) reducing emissions that cause ozone pollution (a proven health threat) and
 - (2) educating people about the significant health effects of using gas-powered lawn care equipment.
- Alternatives to gasoline-powered blowers are readily available (electric blowers and rakes or brooms).

The reason leaf blowers are prime candidates for a seasonal ban are their ubiquity, their inefficiency, the air and noise pollution they cause, individually and together, and their questionable utility. Other, less harmful alternatives are readily available: rakes for leaves and brooms for grass clippings and dirt, both of which are frequent targets of blowers. Readily available electric leaf blowers make noise but do not emit VOCs and NO_x locally. They operate on electricity, but the pollution created to produce the power needed by electric blowers is a fraction of that emitted by gas blowers. Phasing out the use of two-stroke machines in Takoma Park would be a small but important step for clearing our air.

Anti-Idling & Enforcement

The TFEA recommends enacting a strict anti-idling law, and then enforcing it through signage and occasional vehicle visits. State law prohibits idling of vehicles (with the exception of emergency vehicles) for more than five minutes. This should be changed to essentially a "no tolerance" ordinance that would "target" (in as friendly a way as possible) those people who sit in their cars waiting for people to emerge from the post office, stores and banks, or people who are talking or texting and appear in no hurry to go anywhere, all while keeping their engines running. One minute should be the limit for anyone to keep their engine on. If they need to wait longer, they should turn the engine off. On incredibly hot days or days with poor air quality (Code Orange or Red days) exceptions could be made for people who for health reasons need to keep their air conditioners on.

DISCUSSION

A recent paper estimates that idling makes up 1.6 percent of all CO₂ emissions nationwide--a small percentage but a big impact: 93 million metric tons (MMT) of CO₂ and 10.6 billion gallons of gasoline per year. In fact, reducing idling by one minute would eliminate 8 MMT of CO₂ a year.

The paper, published in Energy Policy (Aug 2009), further states:

Despite the large contribution of individuals and households to climate change, little has been done in the US to reduce the CO₂ emissions attributable to this sector. Motor vehicle idling among individual private citizens is one behavior that may be amenable to large-scale policy interventions. Currently, little data are available to quantify the potential reductions in emissions that could be realized by successful policy interventions. In addition, little is known about the motivations and beliefs that underlie idling. In the fall of 2007, 1300 drivers in the US were surveyed to assess typical idling practices, beliefs and motivations. Results indicate that the average individual idled for over 16 min a day and believed that a vehicle can be idled for at least 3.6 min before it is better to turn it off. Those who held inaccurate beliefs idled, on average, over 1 min longer than the remainder of the sample. These data accounts for over 93 MMT of CO₂ and 10.6 billion gallons (40.1 billion liters) of gasoline a year, equaling 1.6% of all US emissions. Much of this idling is unnecessary and economically disadvantageous to drivers. The policy implications of these findings are discussed.

<http://air.greenventure.ca/idling-facts-and-myths>

These findings suggest that education could significantly reduce the impacts from idling. For instance, some people wrongly believe that idling is better than shutting your car down and starting it back up again.. Keeping your engine running longer than 10 seconds, wastes gas and causes unnecessary pollution. New restrictions on idling would raise awareness and help to educate the public on this issue.

http://www.dnr.state.md.us/gasoline_conserve.asp Md Dept of Natural Resources on idling

DOE's anti-idling reduction network news: <http://www1.eere.energy.gov/library/default.aspx?Page=8> (type "idling" in search box)

Clarify and Strengthen Open Burning Ordinance

The TFEA recommends adopting the Montgomery County prohibition (below) on open burning to specifically prohibit burning of wood, leaves or refuse. And educating homeowners with wood stoves about the health effects of wood smoke and the necessity of burning properly cured wood. The Montgomery County ordinance states:

"Open burning is defined as a fire where any material is burned in the open or a receptacle other than a furnace, incinerator, or other equipment connected to a stack or chimney. Open burning is prohibited in Montgomery County without a permit and fines of \$500 per day may be imposed for open burning." (emphasis added).

BACKGROUND

According to EPA, "Wood smoke contains harmful chemical substances such as carbon monoxide (CO), nitrogen oxides (NO_x), volatile organic compounds (VOCs), dioxin, and inhalable particulate matter (PM). Some of the VOCs are irritating, toxic, and/or cancer causing. One of the biggest human health threats from smoke, indoors or outdoors, comes from PM. Wood smoke PM is composed of wood tars, gases, soot, and ashes. Toxic air pollutants are a potentially important component of wood smoke. A group of air toxics known as polycyclic organic matter includes potential carcinogens such as benzo(a)pyrene."

Numerous studies have linked inhalation of woodsmoke to health problems. "The fine particles (or particulate matter (PM)) in wood smoke can trigger asthma attacks in a manner similar to diesel exhaust or secondhand cigarette smoke," Laura Oatman, environmental research scientist from the Minnesota Department of Health (MDH), has said. In addition, air pollutants from traffic, wood smoke and industrial emissions are associated with infant bronchiolitis.

Another study concludes, "Even though woodsmoke is natural, it is not benign. Indeed, there is a considerable and growing body of epidemiological and toxicologic evidence that both acute and chronic exposures to woodsmoke in developed country populations, as well as in the developing world, are associated with adverse health impacts."

New health studies also have found that breathing wood smoke has impaired blood clotting. Woodsmoke is also associated with decreased memory and lower IQ's in children.

It is not clear how significant a problem open burning is in Takoma Park. There have been reports of the burning of materials in several neighborhoods.

The intent of this minor change in the law is not to stop people from grilling with charcoal, enjoying a small fire on their patio after dark, or roasting marshmallows, but to make clear that burning is not the way to get rid of your trash, twigs, or branches.

Whatever the degree of impact, replacing the city's regulation with the county's would at least make people

aware that they should not burn for the sake of burning. In addition, the city should educate residents with wood-burning stoves about the importance of using properly dried, cured wood. The use of green wood or wood with a high moisture content results in smoky emissions. Properly burned wood should not give off visible emissions.

COST

Approval of a new ordinance would have low cost for the City. Enforcement costs are currently unknown, but are not likely to result in more than a

few thousand dollars a year in personnel costs. The fire department should be consulted on any changes in the law as there may be public safety benefits to consider as well.

REGULATORY BACKGROUND

The City ordinance is not specific about wood burning as compared to the county language, which encompasses "any material ... burned in the open or a receptacle other than a furnace, incinerator or other equipment connected to a stack or chimney," The city's law prohibits the burning of "trash, garbage or refuse" in public areas, and "trash or rubbish of any description, including leaves, paper or like material" in open yards (10.16.110).

<http://www.montgomerycountymd.gov/deptmpl.asp?url=/content/dep/aq/recburning.asp> MoCo link

http://www.epa.gov/burnwise/pdfs/woodsmoke_health_effects_jan07.pdf Health effects of breathing woodsmoke (EPA)

<http://www.pca.state.mn.us/air/woodsmoke/healtheffects.htm> Minnesota Pollution Control Agency: "Health effects of wood smoke"

<http://www.biosciencetechnology.com/News/Feeds/2009/11/sectionsindustries-air-pollution-increases-infants-risk-of-bronchioli/> (Air pollution increases infants' risk of bronchiolitis)

<http://www.sparetheair.org/> California Bay Area

<http://www.dec.ny.gov/press/61319.html> ("A smoky fire is the result of incomplete combustion. The most common causes are wet wood, burning fuel other than wood, not enough air flow into the stove, an improperly maintained stove or chimney, or an old inefficient wood stove. Smoky fires damage the local air quality, waste fuel, and cause creosote deposits in chimneys that can lead to chimney fires.")

BUILDINGS

Introduction

Given the large component of energy use and emissions (and other environmental impacts) related to buildings, and the condition of the city's building stock (see environmental issues below), the buildings committee naturally focused on energy efficiency improvements for existing structures. The committee considered ways that larger building owners and landlords can implement energy efficiency improvements even if there are currently few financial incentives to reduce resident utility bills. Additionally, Takoma Park residents spend considerable money on renovations, additions, and improvements; when combined with education, efficiency upgrades and other financial incentives, those dollars can provide significant energy and emissions savings and other environmental benefits.

Environmental Issues

Buildings, primarily in their operations but also in their construction, represent a large impact on the environment. The 2000 GHG inventory calculated that homes account for 25 percent of all emissions in Takoma Park.

The buildings committee focused primarily on addressing energy use, but the built environment also has a huge impact on the natural environment that once stood in its place and nearby, affecting wildlife and habitat, trees and plants, soil and groundwater. Efforts to “green” the built environment retroactively or during any new construction can alleviate some of those impacts, yielding benefits beyond those associated with energy or emissions usage.

Much of the housing stock was built in the early 1900s and the early 1940s. “Newer” apartment rental buildings were built during the post World War II period and between 1960 and 1980. Bureau of the Census data reflect these trends: 68% of housing units were built prior to 1960; another 28% between 1960 and 1980; and only 4% built since 1980. (source: 2009 City of Takoma Park grant proposal “Hundred House”

Recommendation	Type of Benefit ¹	Degree of Impact ²	Geographic Impact ³	Costs (City/Others) ²	Feasibility ²	Fit with Other Applicable Plans ⁴	Timeframe ⁵
0.1% excise/sales tax on sale of all real estate in City OR allocation of dedicated percentage from existing property tax devoted exclusively to green building/energy efficiency improvements	GHG, Strm, NRG, Hab	Med	Ward, City, Region	City – Low/ Others - Med	Med	Could establish something starting to be like county Dept of Env., state MEA, or fed EPA.	Implement: short Complete: ongoing
City to establish Energy Efficiency Rent Increase Petitions modeled on existing policy, but with shortened cost allocation periods and including energy retrofits	GHG, NRG, Social	High	City	City – Low Property Owners – Med	Med	n/a	Implement: short Complete: medium
Spur homeowner action/investment to undertake home energy audits and retrofits	GHG, NRG, Hab, Social	Med/High	City, Global	Med	High	Complements county incentive (\$600 TP plus \$250 MoCo)	Implement: short Complete: short
Mandate green building program certification (or create our own) for all new buildings and new construction over 500 sq ft. within City limits, and/or promote/distribute city-endorsed green building guidelines.	GHG, Strm, NRG, H	Med	Ward, City, Region	City – Low to Med Homeowners – Med	Med	?	Implement: short to medium Complete: short to medium
Allow residential & commercial building owners in historic district to make energy efficiency improvements (e.g. window replacements)	GHG, NRG	Med	Ward, City	City – Low, Homeowner - Med	Med	?	Implement: short Complete: short
Home Energy Loan Program – city provides (or supplements) funding for the un-funded county Home Energy Loan Program (financing 1 st for energy efficiency, then renewable energy improvements – available for property owners, puts a low-interest loan as lien on house and paid through property tax bill)	GHG, NRG, Money after 5-15 years	Med	City (and Region, National, Global)	City – Med Investors – Low	Med	Aligned (and currently exceeds) County program	Implement: short Complete: ongoing

(1) Environmental media area impacted by recommendation: Air = Air; Bld = buildings; GHG = greenhouse gas mitigation; Hab = habitat; NRG = energy; Public Health Benefit = PH; Resilience for the community = Res; Social Benefit = Soc; Strm = stormwater; Trns = transportation; Wst = waste; and All = effects on all environmental media areas.

(2) Graded relative to other recommendations.

(3) Geographic impacts can include Ward; City; County; Regional; National; and Global.

(4) Degree of alignment or fit with other County, State or Regional goals/targets/activities.

(5) Short (0-2 years), Medium (2-5 years), or Long-term (5+ years).

submitted to DOE)

The city building stock has some commercial buildings but is dominated by approximately 7000 housing units. Of those, more than 50 percent are renter-occupied and concentrated in larger (6 units+) apartment buildings. In recent years, over 500 rental units have been converted to condominiums, thus transforming apartment buildings into owner-occupied

medium to large multi-unit buildings. Single family homes make up a large portion of the remainder of the city. (source: City Staff rental property info, US Census 2000).

Being an established "Tree City USA" community, Takoma Park has a good population of mature native trees - many more than a century old. These trees provide many benefits including protection of local rivers and the Chesapeake Bay from stormwater run off, reduction of the heat island effect, and significant reductions in energy demand from air conditioning in the summer months. Substantial tree cover and an extensive historic district, however, constrains some green building options.

The City has made modest improvements to its buildings and operations, where possible, including conducting energy audits and installing lighting and heating system upgrades. Unfortunately, the City failed to incorporate many green-design features in the new community center. For the most part, the City has incorporated easily obtainable improvements. In the future, the City should increase the "green" features of its own buildings and attempt to influence, encourage, and further support greening of the remaining city building stock.

According to the Center for American Progress, buildings account for 70% of electricity consumed in the US and 40% of GHG emissions. According to the US Green Building Council, emissions from buildings will increase faster than those from any other source over the next 25 years. While building codes can address new construction, Takoma Park is home to many older buildings housing the majority of the city's residents. Those old houses often have drafty windows, lack insulation, employ inefficient heating technologies, have old, inefficient lighting technologies, and wasteful water fixtures. Each of these problems wastes enormous amounts of energy, water, and petroleum products and generate tons upon tons of needless greenhouse gasses.

The key barriers to implementing energy efficiency measures in the residential sector are inertia and lack of awareness of the potential cost savings and pay-back period of simple retrofits. People are focused on other issues and will not focus on energy efficiency unless there is significant City involvement and leadership, a comprehensive communication effort aimed at changing behavior, and financial support when needed. Energy efficiency is just not sexy. Low-income property owners are unlikely to invest scarce financial resources in energy efficiency because they often do not understand the long-term financial benefits of energy efficiency and do not have the resources to invest in energy-efficiency improvements.

Revenue

The TFEA recommends Takoma Park raise revenue from buildings and devote that revenue stream exclusively to green building/energy efficiency improvements. TFEA suggestions for revenue generation include enacting a 0.1% excise fee on sale of all real estate within City boundaries OR setting aside an allocation (or increase of) property taxes in order to generate \$50-100K, at least initially, per year for this fund.

SUMMARY OF CURRENT PROBLEM

One of the major problems the City faces is lack of funding. Environmental programs, while often good ideas, are seldom implemented due to lack of additional City funds necessary to implement them.

In order to minimize public objection, we recommend that the funding streams have some logical connection to the method of raising those fees and the use of the money raised. When the affected citizenry see a direct benefit of that money in a way connected to its generation it becomes easier to support. Funds raised from property owners could go back to them in the form of subsidies or incentives to implement improvements, hopefully saving them as much or more as any increased costs for excise tax or property tax.

To "green" the City, it's essential that the City adopt and fund those environmental programs recommended for energy efficiency improvements. Some such programs could be creation of a low interest (4% or less) loan fund dedicated to homeowners to finance certain approved energy-efficiency improvements, energy audits and retrofits, or green building certification program.

REGULATORY FRAMEWORK

City must ensure that it has sufficient taxing authority under Maryland law and put in place necessary changes to enact funding mechanisms recommended.

TYPE OF BENEFIT

Will provide funding for all TFEA building & energy recommendations and will positively impact most environmental areas by reducing energy usage.

DEGREE OF IMPACT

Medium: Amounts raised are substantial, but will not allow funding of all recommended programs. The TFEA expects Dedicated Green Building/Efficiency Funding to initially provide \$50,000 to 100,000 per year.

Considering that average whole-house audits and "cost effective" improvements run approximately \$7500 each, then

\$50-100K per year could fund 7-15 houses/year. If the City contributed 10% of costs, that program would then cover 70-150 houses/year. Combined with a loan program, the funds could be further leveraged or a revolving loan fund could be implemented.

Note that these calculations of the benefits of a 0.1% excise tax on real estate sales are based upon recent homes sales data for the 20912 zip code including:

Single Family Homes:

- 2005: 195
- 2006: 191
- 2007: 148
- 2008: 114
- 2009: 129

Condo and Coop Sales:

- 2005: 16
- 2006: 39
- 2007: 35
- 2008: 12
- 2009: 34

Using these sales figures, a 0.1% tax on an average \$500,000 homes, gives \$500 revenue per home sold. With an average 150 homes sold per year (not including condos or commercial sales), revenue raised would be about \$75,000.

Compare that to allocating 0.5 to 1 percent of current city property tax revenue, which provides about \$55,000 to \$110,000. Raising property taxes by $\frac{1}{4}$ to $\frac{1}{2}$ cent per \$100 of assessed valuation would provide \$47,000 to \$95,000.

Fiscal year 2011 proposed city budget estimates revenue from property taxes to be nearly \$11M. At current property tax rate of \$0.58 per \$100 of assessed valuation. ($.0058 \times 1.9B = \$11,020,000$), \$0.5825 per \$100 on \$1.9B = \$47,500 and \$0.585 per \$100 on \$1.9B = \$95,000

GEOGRAPHIC IMPACT

Primarily Ward and City-wide impacts. Expect reductions from program implementation and funding to reduce energy usage and pollution which will have effects on the County and regional levels.

COST (CITY/OTHERS)

Minimal costs to city for staff time to draft and implement new funding sources.

Low costs to City residents depending upon rates selected by City Council. If property sale excise tax were chosen,

charges would only fall upon homeowners and commercial property owners selling/purchasing homes.

FEASIBILITY

High feasibility. There could be some backlash from property owners, however.

FIT WITH OTHER APPLICABLE PLANS (CITY, COUNTY, STATE, REGION)

The county and state and federal gov't all have allocated budgets to fund their environmental programs through Dept of Environment, Maryland Energy Administration and EPA. This could give the city that type of consistent funding.

TIMEFRAME

Recommend immediate implementation and continuation indefinitely.

SECONDARY IMPACTS (POSITIVE AND NEGATIVE)

None identified.

QUESTIONS THAT REMAIN TO BE INVESTIGATED BY CITY

Ensure City has sufficient legal authority to implement excise tax or other funding mechanisms.

LIST OF REFERENCES

FY 11 Proposed city budget.

Rental Housing Energy Efficiency Improvements

The city should encourage energy efficiency in multi-family housing by allowing landlords to increase rents (under supervision of city's Department of Housing & Community Development) in order to recapture costs of energy efficiency improvements.

SUMMARY OF CURRENT PROBLEM

Existing city policy allows landlords to increase rents based on amortization of the useful life of a capital improvement to a rental facility. The TFEA recommends allowing landlords to increase rents more than existing policy (capped at 10 to 15% annually) in order to reduce the carbon footprint of rental facilities operating in the city. To support energy efficiency improvements without costs to the city, landlords' costs should be amortized over a relatively shorter period (based on the size of facility) with energy retrofit activities qualifying as capital improvements. Final rent increases may be determined contingent upon expected or actual energy savings.

Specifically:

- Improvements must reduce the net energy use of a rental facility (as determined by a contractor registered with Maryland Energy Administration);
- Improvements must cost at least \$2500 (the current City policy for Fair Return Rent Increase Petitions);
- The city may choose to set an upper limit on costs to limit potential impact on rent increases
- Rent increase would be limited to 15% per year**;
- Landlords would be allowed to recover costs over a period of years as decided by the city, possibly based on number of units in facility. Fair Return Petitions currently utilize IRS amortization rates, but other jurisdictions (such as DC) use a period set by the jurisdiction that is typically shorter than the IRS amortization period (DC sets a period of 48 to 72 months based on the number of affected units in a facility). Alternatively, the city may select another method for adjusting amortization; and
- The city may choose to consider expected energy savings in determining rent increases, but should be cautious in relying on “expected” savings.

Energy retrofits can cut energy use by up to 40% and improve living conditions for tenants by promoting more consistency in provision of utilities such as heat, hot water, and air conditioning (e.g. fewer days without heat because of an older boiler in poor repair). Currently, individual tenants have a limited capability to limit emissions of the city’s rental facilities.

REGULATORY FRAMEWORK

Rent increases are governed by Chapter 6 of the City Code.

TYPE OF BENEFIT

The TFEA expects greenhouse gas and energy impacts. Enacting this recommendation will reduce carbon emissions and energy use in Takoma Park;

Additionally, there are substantial social benefits. More efficient buildings could improve day-to-day living conditions of apartment residents (i.e. more consistent heat and/or hot water to units).

DEGREE OF IMPACT

High – Each building where implemented will decrease the carbon footprint of multiple households at once.

GEOGRAPHIC IMPACT

City – There are large rental facilities located in wards 1, 2, 4, 5, and 6.



COST (CITY/OTHERS)

City – Low – no direct cost other than changing what's allowed under rent increase petition process.

Owners/Renters - Medium – annual rent increases must be managed to maintain affordability of certain facilities. Ideally rent increases will be offset by energy savings.

FEASIBILITY

High – The city must engage residents in a discussion weighing benefits and costs before implementation.

FIT WITH OTHER APPLICABLE PLANS (CITY, COUNTY, STATE, REGION)

n/a

TIMEFRAME

Implement – Short – The recommendation can be acted on within two years.

Complete – Ongoing - Implementation will take several years for each building.

SECONDARY IMPACTS (POSITIVE AND NEGATIVE)

Enacting this recommendation will put an undetermined amount of pressure on the city’s stock of affordable rental housing, but it will lower the overall energy use by the city and should improve the quality of life of tenants. Lower income tenants should not be required to live in squalid, drafty, inefficient housing just to keep it affordable.

QUESTIONS THAT REMAIN TO BE INVESTIGATED BY CITY

In order to mitigate pressure on housing stock, the city may determine by survey the percentage of income paid by tenants in facilities across the city and limit participation by specific landlords as needed to protect affordability.

Energy Retrofits

The TFEA recommends City investments to spur homeowners to take action on energy efficiency retrofits in existing housing stock. Energy used in the residential sector in Takoma Park can be significantly reduced through an effort to encourage citizens to conduct energy audits and retrofits in homes. Payback for all investment is expected to be 3 to 5 years with efficiencies continuing each year in the future.

This recommendation has three components:

- (1) Energy efficiency (long-term private sector energy use reduction) through residential energy audits and retrofits;

- (2) Public education on the benefits of energy efficiency measures and how to implement them through a few demonstration energy efficiency audits/retrofits for low income homeowners, filming same by award-winning Takoma TV, a public meeting where the demo film is shown and the public can meet with audit/retrofit professionals, and a City subsidy offered to increase interest in and implementation of audits and retrofits.;
- (3) Tree planting and preservation to reduce energy needs through City contracting with cost reductions (current program but with increased public outreach to increase demand).

SUMMARY OF CURRENT PROBLEM

Private sector building energy use is one of the largest opportunities for energy efficiency improvements. Homeowners and other building owners often do not realize the levels of energy savings that can be achieved for their home. The audit/retrofit demonstrations and public meeting will show them the levels of energy efficiency they can achieve and motivate them to take actions to improve their home or building performance. Small City investments will leverage private investments to help finance these improvements.

REGULATORY FRAMEWORK

Qualified audit/retrofit professionals are listed on the Maryland Energy Administration web site. Participating homeowners will be required to provide documentation of energy use for 1 year before and 1 year after retrofits. Steps should be taken to protect the privacy of participants, perhaps by listing the block of each participating building. The City may negotiate with Pepco and Washington Gas to allow building owners to have energy use data released directly to the City to make data collection more efficient.

INCREASING ENERGY EFFICIENCY

This project will contract with certified energy audit/retrofit companies to implement energy efficiency improvements in 3 to 5 homes of low-income and senior residents of Takoma Park. Certified Building Performance analysts will be contracted by the City to conduct audits and retrofits on the selected properties.

The audit will identify the most cost-effective improvements to be made for each building. Improvements will include caulking and sealing, insulation, hot water heater blankets, and may include a limited number of refrigerator

replacements with Energy Star appliances. Each audit/retrofit can cost up to \$5,000.

Single family properties to be funded for demonstration audit/retrofits will be chosen based on income and age criteria to select properties where energy savings will provide significant improvements in quality of life of the residents. Initial criteria will specify a household income less than \$60,000 for property owners of aged 65 and older and \$45,000 for younger property owners. The City will also solicit candidate properties for audit/retrofits through its local Newsletter, Takoma TV, neighborhood association networks, churches and other communication channels.

Participating property owners for demonstration and subsidized audits/retrofits will be required to provide energy usage information for one year prior to and after the retrofit implementation as a condition for the City paying for or subsidizing the audits and retrofits. Participating property owners will also receive information on the financial and environmental benefits of energy efficiency and how to practice energy efficiency. Individual property owners will receive information on the before and after energy performance of their specific property via letter; compiled information (minus private information) from all participating properties will be presented to the community.

PUBLIC EDUCATION AND BEHAVIOR CHANGE COMMUNICATIONS

This project aims to encourage all Takoma Park property owners to conduct energy audits and implement energy efficiency measures similar to those taken at the City-funded residential units. The goal is to have at least another 300 additional homes implement energy efficiency measures using homeowner/property owner funds and/or tax rebates and other Local, State and Federal Incentives. The project capitalizes on existing community resources for public education and outreach, creates incentives and leverages existing incentive programs.

The award-winning Takoma TV will document the work done at City-funded residential properties and use this for outreach and education to the larger community. The audit and retrofit educational documentaries will be designed to encourage other property owners to hire home energy auditors and implement energy efficiency retrofits.

A Takoma TV film crew will visit the City-funded properties being audited/retrofitted to video the problems found, the types of work being done, and to interview energy experts about the retrofits and the benefits to be gained. They will

interview property owners to get their views on the audit/retrofit experience. The final production will also include information on the costs of the audit and retrofits and savings gained at each of the featured properties. Takoma Park residents will be able to see how this work was done in their neighbors' homes, using contractors they can hire themselves.

The Takoma TV documentary will be unveiled at a community event where the public will be invited to learn about the project progress and results, and meet invited energy audit and retrofit professionals. Chevy Chase, Maryland, held community events in April 2009 and January 2010 that brought energy efficiency professionals to speak to community members. The Takoma Park event will build on this model by showing the results of the City-funded audits and retrofits, including the video of how audits and retrofits are done. Similar previous events in Takoma Park (e.g. a Green Building event in 2007) have attracted hundreds of attendees.

This energy efficiency event will also provide information on the financial incentives available to property owners for energy efficiency projects, including \$250 rebate from Montgomery County, any available grants or incentives from the Maryland Energy Administration, Recovery Through Retrofit Information, up to \$1500 tax credit from the Federal government (for work done through calendar year 2010), and a new Montgomery County Home Energy Loan Program for energy efficiency expected to be funded by summer 2010. The event will also emphasize the value and proper care of mature trees and Takoma Park's current discounted tree planting program.

This event will be broadcast live and repeated on the City cable channel, and archived on the City website. The event will be promoted and reported through the City Newsletter and local community groups, churches and neighborhood associations.

This television outreach will be coupled with City financial incentives to increase property owner interest in energy audits and efficiency retrofits. Chevy Chase has recently offered a small incentive of up to \$600 per homeowner for energy efficiency audits and retrofits, with 33 applicants in less than a month. Chevy Chase has shared program and contract documents with the City, allowing Takoma Park to adapt them for its own use. Property owners using this incentive will be required to provide energy usage information for one year prior to and after the retrofit implementation as a condition for the City-paid incentive. If the City is able to hire a full-time Sustainability Coordinator,

this program could be part of that employee's responsibility to promote, manage, and document this program.

Estimated costs of the program:

- (1) Three to five energy audit/retrofits: \$20-25,000;
- (2) Takoma TV documentary (Staff time): \$20,000;
- (3) Staff/volunteer time to organize and promote the community event: unknown;
- (4) City subsidies (\$600 each) to homeowners for audits/retrofits: \$30,000 for first year but can be extended;
- (5) Homeowner investments expected to be \$2,500 to 4,000 per/house, plus County and Federal rebates of up to \$1750: \$212,000.

This project can be scaled up or down based on budget and staffing availability. A minimum effort would be to invite certified energy audit/retrofit professionals and other experts to a public meeting, taped and televised on Takoma TV, that allows citizens to hear and interact with these experts. Perhaps only one house would be funded by the City to be audited/retrofitted and filmed. The total amount of subsidies offered to homeowners for audits/retrofits could be adjusted up or down based on budget availability. A grant application for \$1.4 M has been submitted to US DOE for an expanded version of this project; if the grant is awarded, the full project as outlined in the grant proposal should be implemented.

TYPE OF BENEFIT

Using documented audit/retrofit savings found by one local company, we assume each home audited/retrofitted will have an estimated cost savings of \$607 per year in current dollars. The City can document actual cost savings from the 3-5 City-funded homes and the estimated 50 homes receiving subsidies: \$33,385/year

Energy saving benefits from tree planting will be small in initial years but grow substantially in future years.

This project creates demand for the auditing and energy efficiency retrofitting services (several of which are Takoma Park businesses) and the energy savings these provide.

DEGREE OF IMPACT

Medium to large, depending on the extent to which audits or retrofits are promoted and used.

GEOGRAPHIC IMPACT

City-wide to global

COST (CITY/OTHERS)

Medium to high. Would require staff time to organize and maintain.

FEASIBILITY

High.

FITS WITH OTHER APPLICABLE PLANS (CITY, COUNTY, STATE, REGION)

Yes, very well

TIMEFRAME

Could be implemented within a year, continue as long as appropriate.

SECONDARY IMPACTS (POSITIVE AND NEGATIVE)

Enhanced understanding of the levels of energy efficiency that can be achieved.

Increase motivation of homeowners and building owners to achieve efficiency.

Need to update energy savings data as energy use at participating homes changes.

QUESTIONS THAT REMAIN TO BE INVESTIGATED BY CITY

Investigate possibility of memorandum of understanding with Pepco and Washington Gas, and Washington Suburban Sanitary Commission to ease collection of monthly use data.

LIST OF REFERENCES

Grant Proposal, City of Takoma Park "Hundred House" Community Energy Efficiency Project, submitted to US DOE, December 14, 2009.

Appendix F – Chevy Chase Program Form (energy audit retrofit rebate form)

Green Building Guidelines

Actively promote City green building guidelines and mandate green building certification on all construction projects over 500 square feet, residential and otherwise, within Takoma Park city limits. See Appendices d and e.

SUMMARY OF CURRENT PROBLEM

The City has a set of green building guidelines developed by the Takoma Park Committee on the Environment and adopted by Council in 1999. Montgomery County adopted green building standards that require buildings greater than 10,000 sf to be LEED certified and buildings with 30% or greater County funding to meet LEED Silver certification. These two items complement each other—the County standards set minimal requirements while the

City guidelines advise all builders on how to improve the sustainability of their buildings. The County administers all building permitting services and reviews applicable developments for achievement with the required County standards.

Currently Takoma Park has not been active in distributing the City green building guidelines to developers or homeowners considering renovations. The City should review and update informational links in the guidelines and post them to the City web site. City staff should distribute paper copies of the guidelines to all developers or homeowners considering construction within the City boundaries and strongly encourage adherence to the guidelines in design and construction of every development or renovation. In addition, the City should institute green building requirements that go beyond the current County green building standards. Buildings built within Takoma Park are currently not expected to meet more than the minimal criteria set by the county codes for energy performance and environmental impact. Such projects exacerbate the problems of rising electrical demand, local environmental damage, and regional harm to flora and fauna.

REGULATORY FRAMEWORK

By raising the expectations of new construction and renovation, Takoma Park would see projects that are far superior to comparable projects. Widely promoting the City green building guidelines would be a good start toward meeting this goal. By using a well-vetted process developed from many organizations that produced a framework for rating homes and buildings, Leadership for Energy and Environmental Design (LEED) would help the City meet this ambitious goal.

The U.S. Green Building Council (USGBC) has developed the LEED system to accurately measure and record the performance and impact of a building. The latest version of the LEED system (version 3) covers all types of projects: residential, commercial, industrial, retail, etc. USGBC.org describes the LEED rating system in more detail, including how to register and manage projects, the goal of each credit, and the point system to achieve certification.

The Environmental Protection Agency, the Department of Energy, and many other organizations with building-related criteria are also incorporated into the LEED rating system.

TYPE OF BENEFIT

Appendix E provides lists of the benefits available for building and home projects. USGBC.org has the LEED rating system described in more detail, including how the system functions. In summary, the benefits include:

Energy benefit: less energy demand and use within the City limits. Each year the minimum requirements increase, demanding that the energy used by future certified buildings decreases. Overall energy demand within Takoma Park would plateau, and eventually decrease as standards become more stringent. With each certified project, USGBC would track the energy performance through the life of the building.

Environmental benefit: The majority of materials and resources for projects would need to come from local sources, reducing transportation impacts. More of the materials used would be required to be renewable and/or recyclable. Stormwater plans would be required to reduce quantity and increase the quality of water discharged.

DEGREE OF IMPACT

For energy savings, each new certified LEED building or home would save a minimum of 10% energy against a similar project. For platinum certification, the energy saving would likely be much higher.

A LEED certified project would, in one way or another, have improved environmental impact over comparable projects. With the flexibility of the LEED system, a home or building will have measurable enhancements that give owners, designers, and builders a number of methods to choose from to have a positive environmental impact. Without mandatory restrictions the home or building can be developed more specifically to the site, and LEED recognizes detailed regional requirements that apply specifically to Takoma Park.

GEOGRAPHIC IMPACT

There are a number of LEED items that recognize benefits of a thoroughly designed site that relate directly to the local and regional geographic benefits. Prerequisites for LEED buildings require construction pollution prevention and an environmental site assessment. In addition to the number of site-specific items, a number of items directly relate to other environmental concerns. A list of sustainable site items that are considered in the LEED system is included in Appendix E at the end of this document.

COST (CITY/OTHERS)

The cost to register the project would be on the owner. Upon platinum certification, 100% of the USGBC

registration fees would be refunded to the owner from the City. For gold certification the owner would recover 75% of the USGBC fees; silver, 50%, and certified would have 25% of the fees refunded. For a home or building not achieving LEED certification the owner would forfeit the LEED registration fees. An additional penalty/fine, equal to the registration fees, would be levied by the City.

FEASIBILITY

Other cities in the Washington, D.C. region have adopted the LEED system. Included is Montgomery County, which requires a minimum LEED rating for all government buildings. Other agencies, cities and counties in the United States have implemented a minimum of LEED platinum with penalties for achieving below the platinum rating.

Adopting a LEED platinum policy would require the permitting office to track each project and its progress with the owner and the USGBC. The City would need to negotiate with the County Department of Permitting Services to ensure that the buildings meet the specified LEED standard. Projects that succeed would receive green building and energy efficiency recognition in the City. The City and/or County may provide expedited permit review.

While it may be expected that most projects will achieve LEED certification, not all will complete the certification. Penalties for not achieving at least the minimum rating would be based the number of points missed below the minimum and the total construction value of the project. The penalty would be calculated by the following formula:

Penalty (in dollars) = Number of LEED points below Certification X Total construction value X 0.1%

These fees would provide funding for incentives and rebates for sustainable energy projects in Takoma Park.

FIT WITH OTHER APPLICABLE PLANS (CITY, COUNTY, STATE, REGION)

Promoting City guidelines would meet City requirements. Requiring LEED platinum would supersede the county and state minimum requirements.

TIMEFRAME

Promote City guidelines in short term and continue to medium and long term. The implementation of LEED certification could occur in the medium term once procedures for handling fees and evaluating achievement of LEED standards in building projects. Once implemented the effect would be immediate. Current projects (projects that have obtained a permit for construction) would be exempt.

SECONDARY IMPACTS (POSITIVE AND NEGATIVE)

Developers, builders, and owners may react negatively to having to LEED certify their projects.

The implementation of a mandatory LEED Platinum rating would encourage smart growth and renovation within Takoma Park.

QUESTIONS THAT REMAIN TO BE INVESTIGATED BY CITY

Developers, builders and owners may request assistance to find green and sustainable financial programs and tax assistance. The City should investigate and update the programs available. City will need to negotiate administration with County and may need an MOU to implement.

LIST OF REFERENCES

<http://www.USGBC.org>

<http://www.EnergyStar.gov>

BLDG Appendix D – LEED Basics – explanation of LEED from USGBC materials

BLDG Appendix E – LEED Rating System Summaries for Commercial & Retail and for Homes

CLIMATE CHANGE

This chapter recommends climate-related actions to reduce greenhouse gas (GHG) emissions. It builds upon the recommendations in the City's 2000 Local Action Plan for Reducing Greenhouse Gas Emissions (LAP). A review of the implementation status of the LAP recommendations is reflected in Appendix B.

Climate change threatens to dramatically alter our natural world resulting in significant shifts in all aspects of nature, including the availability of water; the prevalence of species; and the severity of adverse weather events. At current rates of change, the climate of Takoma Park is expected to approximate that of southern Georgia by 2100.

Much has been written about climate change, and this report will not review the causes of human-induced climate change or the likely impacts for Takoma Park. Readers are referred to the Intergovernmental Panel on Climate Change Fourth Assessment, the U.S. Global Change Research Program's report, "Global Climate Change Impacts in the United States," and chapter 1 of the LAP.

Takoma Park's contribution to climate change probably has not changed appreciably from the situation outlined in the 2000 LAP. That report stated:

Excluding the (unfortunately significant) contribution from flow-through traffic, which is outside mediate control of the City, Takoma Park currently produces about 350,000 tons of CO₂ a year from energy consumption, or nearly 15 tons per resident.

The single greatest source of CO₂ is the use of electricity (51 percent of the total), followed by gasoline (30 percent) and the use of natural gas (12 percent). Other measurable energy sources of CO₂, ranging from three to less than one percent, are diesel, heating oil, propane and compressed natural gas.

The greatest sources of CO₂ by end-use are the commercial sector (which includes municipal use and

the tiny industrial activity within the City) at 40 percent; followed by transportation at 34 percent and residential at 25 percent. A fourth category, waste, produced less than one percent.

Monitoring and Implementation Plan

The City should seek to reduce GHG emissions by 10% every five years beginning in 2010 (the same reductions adopted by Montgomery County) and actively monitor and report on the

Recommendation	Type of Benefit ¹	Degree of Impact ²	Geographic Impact ³	Costs (City/Others) ²	Feasibility ²	Fit with Other Applicable Plans ⁴	Timeframe ⁵
GHG Emission Goals: The City should seek to reduce greenhouse gas (GHG) emissions by 10% every five years beginning in 2010 (the same reductions adopted by Montgomery County).	GHG	High	C	Low	High	High	Short
GHG Inventory and Monitoring Plan: The City should professionalize the preparation of a GHG inventory, and commit to regular updates to monitor City progress.	GHG	Low (indirect impact)	C	Low	High	High	Short
Community Engagement: The City should launch a campaign to mobilize the community to make changes to reduce individual residents' carbon footprints.	GHG	Medium-High	C	Low	High	N/A	Medium
Carbon-neutrality in Municipal Operations: The City should achieve carbon neutrality in operations by 2015. This requires cataloging all City non-renewable energy/fuel use and purchasing renewable energy certificates and offsets. By 2020, the City should aim to obtain all of its electricity from local renewable sources and move its vehicle fleet primarily to electricity and non-petroleum fuels.	GHG	Medium	C	Medium	High	N/A	Medium-Long

- (1) Environmental media area impacted by recommendation: Air = Air; Bld = buildings; GHG = greenhouse gas mitigation; Hab = habitat; NRG = energy; Public Health Benefit = PH; Resilience for the community = Res; Revenue raising = Rev; Social Benefit = Soc; Strm = stormwater; Trns = transportation; Wst = waste; and All = effects on all environmental media areas.
- (2) Graded relative to other recommendations.
- (3) Geographic impacts can include Ward; City; County; Regional; National; and Global.
- (4) Degree of alignment or fit with other County, State or Regional goals/targets/activities.
- (5) Short (0-2 years), Medium (2-5 years), or Long-term (5+ years).

City's progress toward meeting these goals.

It is clear GHG emissions must be reduced significantly to mitigate climate change. In the 2000 LAP, Takoma Park adopted an ambitious GHG reduction goal of 20% reductions from 1990 levels by 2010. The City also endorsed the U.S. Conference of Mayors' goal of reducing GHG emissions by at least 7% below 1990 levels by 2012. It seems unlikely Takoma Park has achieved either goal.

Since 2000, a variety of efforts have been underway at the international, federal, regional, state, county, and municipal levels to set GHG emission goals to help guide action toward GHG emission reductions. The United States has committed to keeping the average global temperature from rising by more than two degrees celsius. All major GHG emitting countries have also agreed to this goal. It is generally believed that in order to reach this goal, U.S. emissions must be reduced by approximately 80% no later than 2050. There are significant

caveats to this statement, including that 80% reductions may not be sufficient; 2050 may be too late; and continued emissions increases from non-U.S. countries may render moot U.S. reductions.

We believe Takoma Park's GHG emission reduction goals should work in tandem with applicable emission reduction goals from the county, state, regional and federal levels. In particular, Montgomery County adopted the goal of stabilizing County GHG emissions in 2010, and then reducing emissions by 10% every five years, resulting in the following targets:

- emissions stabilize by 2010
- 10% reduction from 2005 levels by 2015
- 20% reduction from 2005 levels by 2020
- 40% reduction from 2005 levels by 2030
- 80% reduction from 2005 levels by 2050

We recommend that, as a city within Montgomery County, Takoma Park adopt the same goals so that Takoma Park can benefit from synergies with Montgomery County's efforts and help lead Montgomery County localities in achieving those targets.

REGULATORY FRAMEWORK

Existing GHG reduction targets are not regulations and do not bind Takoma Park. However, it is important to understand the GHG reduction goals of other political units, particularly those units that incorporate Takoma Park in their jurisdiction, so that efforts can be coordinated and so synergies can be realized.

There are no binding federal GHG emission reduction goals. President Obama has conditionally committed that the U.S. will meet the 2020 levels found in the climate bill adopted by the House of Representatives, H.R. 2454, which are:

- 3% reduction from 2005 levels by 2012
- 17% reduction from 2005 levels by 2020
- 42% reduction from 2005 levels by 2030
- 83% reduction from 2005 levels by 2050

Maryland adopted legislation in May 2009 that requires a:

- 25% reduction from 2006 levels by 2020.

The Maryland legislation also recommends, but does not require, the following targets:

- 10% reduction from 2006 levels by 2012
- 15% reduction from 2006 levels by 2015
- 90% reduction from 2006 levels by 2050

The Board of the Washington Area Council of Governments (COG) adopted the following GHG emission targets:

- 10% reduction from 2005 levels by 2012
- 20% reduction from 2005 levels by 2020
- 80% reduction from 2005 levels by 2050

While Maryland state government determines how to apply the May 2009 legislation and what longer-term goals to adopt, we believe it is prudent for Takoma Park to seek to meet or exceed the overall Montgomery County goals.

TYPE OF BENEFIT

The goal of this recommendation is GHG reduction. However, this recommendation would have widespread effects on the sustainability of the community and its resiliency.

DEGREE OF IMPACT

The impact would be high, over time, for GHG reductions.

GEOGRAPHIC IMPACT

The reduction goals would apply across Takoma Park, with no differentiation in cost of impact. The benefits from the reductions would be shared globally.

COST (CITY/OTHERS)

The cost of reducing GHGs would depend on the methods decided upon to implement the plan. Some strategies, like energy efficiency, may produce longer term cost savings that are higher than the implementation costs. Other strategies, like fuel switching for utilities, would increase costs beyond economic savings, although the resulting health and environmental benefits might still result in an overall net savings.

FEASIBILITY

By focusing on energy efficiency and voluntary adjustments in personal behavior, this recommendation could be very feasible in the short term. Beyond 2015 or 2020, however, technological advances as well as political and societal shifts beyond Takoma Park's efforts may be necessary for the long-term goals to be feasible.

FIT WITH OTHER APPLICABLE PLANS

This recommendation adopts the Montgomery County plan's goals as the goals most relevant to Takoma Park. The Maryland goal is slightly higher in 2020, but is based on a different base year. By adopting Montgomery County's base year instead of the State's, we hope to be able to rely on Montgomery County's inventory and reduction efforts to help

provide cost savings and synergies for Takoma Park. Given that we do not know the City's current GHG emissions or the 2005 baseline emissions, we cannot determine whether these goals are consistent with the City's decision to try to meet the U.S Conference of Mayors goal of 7% reduction from 1990 levels by 2012.

TIMEFRAME

This would need to be implemented immediately, and would be a continuing obligation for the City for the foreseeable future.

SECONDARY IMPACTS

Many of the actions likely to be taken to reduce GHG emissions will have secondary environmental benefits (improved air quality, for example) by decreasing burning of coal. Some impacts, however, may be negative, such as potential water contamination from increased natural gas extraction if more natural gas is used to generate electricity as we move away from coal.

By setting these goals, Takoma Park will incentivize other localities to do the same.

QUESTIONS THAT REMAIN TO BE INVESTIGATED BY CITY

How will Takoma Park conduct and revise a GHG emissions inventory every five years? How will Takoma Park monitor its progress toward meeting the goals? How will Takoma Park report its progress toward meeting the goals?

LIST OF REFERENCES

Montgomery County Sustainability Working Group, "Montgomery County, MD, Climate Protection Plan" (Jan. 2009) available at <http://www.montgomerycountymd.gov/content/dep/downloads/2009mococlimprotplan.pdf>.

Maryland Greenhouse Gas Reduction Act of 2009.

Metropolitan Washington Council of Governments, "National Capital Region Climate Change Report" (Nov. 2008) available at http://www.mwcog.org/store/item.asp?PUBLICATION_ID=334.

Intergovernmental Panel on Climate Change, Fourth Assessment (2007) available at http://www.ipcc.ch/publications_and_data/ar4/syr/en/contents.html.

U.S. Global Change Research Program, "Global Climate Change Impacts in the United States" (2009) available at <http://www.globalchange.gov/publications/reports/scientific-assessments/us-impacts>

Professional GHG Inventory

The City should professionalize the preparation of a GHG inventory, and commit to regular updates to monitor City progress.

During the development of the 2000 Local Action Plan for Takoma Park, the City completed its first inventory of GHG emissions, covering the major sources from transportation, electricity and home heating. The inventory was completed by City staff and citizens on the Committee of the Environment and estimated emissions at 347,679 tons (or 540,341 tons including flow-through traffic) in 1990, 317,993 tons in 1995, and predicted that emissions in 2010 would range from 299,016 – 347,102 tons.

An inventory is needed both to test the overall degree to which the City is meeting its commitments under the 2000 LAP, the U.S Conference of Mayors Climate Protection Agreement, and any reduction goals adopted from this plan and because a detailed inventory will allow the City to implement an informed mitigation strategy to reduce emissions from sectors and sources for which the inventory shows the greatest impact.

We recommend that completion of the inventory be professionalized because we believe it is a core function of government that occurs on a regular basis and is sufficiently complex to warrant more time and training than a volunteer body can provide.

It is difficult to make effective progress in reducing greenhouse gas emissions if the City does not track such emissions and how they change over time. A comprehensive greenhouse gas inventory for Takoma Park should be completed by either a professional organization or consultant experienced in such inventories, followed by regular inventory updates every few years. The last such inventory in the City was completed in 2000, but since that time, communities across the country have been taking advantage of new expertise in compiling detailed accounting of greenhouse gases on local scales and standards adopted for that purpose. For example, emissions inventory methodology developed by the International Council for Local Environmental Initiatives is in use by more than 700 local governments around the world.

We recommend that the City should designate paid staff time and/or hire a professional consultant to carry out a comprehensive inventory of greenhouse gas emissions within the City. The inventory would:

- Provide estimates of GHG emissions from 2005 and 2010.

- Include estimates of emissions from commercial, government and residential sectors, and transportation, home heating, electricity and waste sources.
- Include estimates of any carbon losses or sequestration from changes in Takoma Park tree and forest cover during this period.
- Provide estimates that are comparable to those in the 2000 Local Action Plan, but also take advantage of more complex methodologies and better data available since that time to provide more robust estimates of recent emissions.
- Make recommendations on additional monitoring data that the City should collect for the next inventory.

We also recommend that the City Council commit to regular updates of the inventory to monitor the City's progress toward meeting its goals. Failure to monitor implementation of the 2000 LAP and Council of Mayors goals should not be repeated.

Metropolitan Washington Council of Governments (MWCOCG) has formed a working group of local counties and municipalities to request uniform energy usage information from local utilities that can be used to update greenhouse gas inventories and track progress of local climate action plans. Council could instruct the City Manager to assign staff to actively participate in this workgroup representing the City of Takoma Park. The MWCOCG representative is Jeffrey King, Senior Environmental Planner, Metropolitan Washington Council of Governments, 777 North Capitol St NE Ste 300, Washington, DC 20002, 202-962-3238, 202-962-3203 fax, jking@mwkog.org, www.mwkog.org.

TYPE OF BENEFIT

The primary goal of this recommendation is GHG reduction.

DEGREE OF IMPACT

The degree of impact is low because the GHG inventory does not itself reduce emissions, but it makes such reductions more likely to occur.

GEOGRAPHIC IMPACT

This recommendation focuses on the City, although climate mitigation impacts would be global.

COST (CITY/OTHERS)

The cost to the City would be relatively low.

FEASIBILITY

The methodology to do such inventories has been adopted and implemented by hundreds of local communities.

FIT WITH OTHER APPLICABLE PLANS

Adoption of this recommendation is necessary to keep the City's commitments under the LAP and the U.S. Conference of Mayors agreement, as well as to track any GHG reduction goals made in this report.

TIMEFRAME

The implementation should begin soon (ideally within the next year) as the City has already missed timely reporting on 2005 emissions. But once implemented, this recommendation remains a long-term City responsibility.

SECONDARY IMPACTS

A GHG inventory is critical to guide all other climate recommendations because the need for and impact of those actions may change over time as sectors and sources change.

QUESTIONS THAT REMAIN TO BE INVESTIGATED BY CITY

None identified.

Community Engagement

The City should launch a campaign to mobilize the community to make changes to reduce individual residents' carbon footprints.

Municipal operations comprise only a small portion (0.5%, according to the 1990 inventory) of the city's energy use. Therefore, sectors beyond the city government must make significant reductions if the emissions goals laid out by Montgomery County are to be achieved. While government regulations and incentives are important, individuals need to be aware of available programs and have a community support structure for making changes. Thus, an education and mobilization program must be a central component of the City's climate strategy.

In designing a community engagement program, Takoma Park should draw on the experience and successes of other communities. The references below provide some web resources on community engagement ideas and programs from other communities.

The City should designate paid staff time, create a volunteer committee, and/or hire a consultant to be in charge of designing and implementing a "community climate action" program drawing from the experiences and successes of other

communities. Some models from other cities include neighborhood energy challenge competitions (Baltimore, Rhode Island), mobilizing “low-carbon diet” teams (Portland, Davis, Berkeley), online climate pledge campaigns (Aspen, Berkeley), and working with utilities to provide energy tracking reports that compare a household’s energy use to similar households in their neighborhood. This effort should draw on the resources of existing community groups, such as neighborhood associations, schools and churches, and have a strong and well-organized presence on the City’s new sustainability website.

We recommend that the City should designate paid staff time, hire a professional consultant, and/or create a volunteer committee to be in charge of designing and implementing a community engagement program. This person/committee would be charged with:

- (1) Compiling a database of stakeholder groups (including, but not limited to neighborhood organizations, churches, and environmental groups) in the City and region that could play in the community engagement plan;
- (2) Working with stakeholder groups to design an appropriate Community Action program for Takoma Park;
- (3) Ensuring that the Community Action plan engages residents from all Wards and segments of the Takoma Park community, particularly reaching out to low income residents;
- (4) Designing and maintaining the Community Action portal on the City’s sustainability website;
- (5) Implementing the details of the program.

The reference section includes a list of activities which might be adopted by the City.

TYPE OF BENEFIT

The primary goal of this recommendation is GHG reduction. However, this recommendation could also serve to increase community resiliency.

DEGREE OF IMPACT

The degree of impact will be determined by the effectiveness of the program. However, the potential impact is high, considering that individual choices control the majority of GHG emissions in the City.

GEOGRAPHIC IMPACT

This recommendation focuses on the City, although climate mitigation impacts would be global.

COST (CITY/OTHERS)

The cost to the City would be relatively low, especially if volunteer time was well utilized. A small budget would be necessary at least for community events and website design and maintenance. Costs would increase if City staff time was used.

FEASIBILITY

Takoma Park already has a strong history of community engagement and many existing community organizations, and volunteer enthusiasm to draw on. Therefore, the feasibility of this recommendation is particularly high in Takoma Park.

FIT WITH OTHER APPLICABLE PLANS

N/A

TIMEFRAME

The implementation should begin soon (ideally within the next year) and should be ongoing if we are to continue to meet GHG reduction goals.

SECONDARY IMPACTS

As mentioned earlier, this recommendation has a community resiliency benefit in addition to GHG and energy impacts.

QUESTIONS THAT REMAIN TO BE INVESTIGATED BY CITY

None identified.

LIST OF REFERENCES

Examples of Community Engagement models include:

Neighborhood energy challenges (energy-use reduction competitions)

- (1) <http://www.neighborhoodenergychallenge.org/index.html> (Newport, Rhode Island)
- (2) <https://baltimoreenergychallenge.org/systems/energy> (Baltimore)
- (3) Reality TV shows: The Energy Smackdown, The 30-60-90 day challenge.

City-wide efforts to mobilize “low carbon diet” teams(<http://www.empowermentinstitute.net/lcd/>)

- (1) Davis: 100 people, 10 groups to start: http://gsa.ucdavis.edu/Low-Carbon_Diet
- (2) Portland: Did this in 2001 http://www.solsustainability.org/documents/carbon%20commons/LowCarbDiet_article.pdf
- (3) Berkeley: http://www.berkeleyclimateaction.org/Content/10033/Low_Carbon_Diet.html

Online Pledge Campaigns:

- (1) UK 10:10 Campaign: <http://www.1010uk.org/>
(Help with personal baselining for 2009, and measuring for 2010, with the goal for everyone to reduce 10% below 2009 levels in 2010.)
- (2) Berkeley's Climate Action Pledge: http://www.berkeleyclimateaction.org/Content/10005/Climate_Action_Pledge.html
- (3) Aspen's ZGreen Citizen Program: <http://www.aspenpitkin.com/Living-in-the-Valley/Green-Initiatives/Aspen-ZGreen/>

Getting community mandate for climate action:

- (1) City-Wide referendum vote (Berkeley, Measure G: Reduce emissions by 80% by 2050, passed by 80%)
- (2) Survey to determine community's level of motivation and priorities (?)

Well-organized resource centers for citizens:

- (1) Centralized web resources on city website (e.g., Berkeley has a well-designed and maintained website that provides event listings, information and resources, Personal Climate Action "pledge", and eventually will publicly track progress towards GHG reduction goals.)
- (2) Philadelphia: Neighborhood energy offices in commonly visited, respected community centers that are "one stop shopping" (including trained energy councilors) for energy upgrade/savings information. Focus on low income communities. <http://www.ecasavesenergy.org/nec.html>
- (3) Workshops, trainings, education programs in schools. Berkeley: partnering with neighborhood associations to hold community workshops on home energy use, low-carbon diet program in schools.

Programs to help citizens more easily monitor their own energy use:

- (1) Energy use utility reports (e.g., opower.com) utility companies provide households with info on energy use and neighborhood comparisons). Sacramento, Chicago, Seattle, Boston. http://www.nytimes.com/2009/01/31/science/earth/31compete.html?_r=2
- (2) Berkeley is also working with utility company to implement this.
- (3) Aspen is signing people up to use Energy Tracker, from New Ecology, Inc., which is free software that monitors energy use (by downloading from

utility company) and makes plots of how you are doing (not publicly available yet).

Carbon Neutrality in Municipal Operations

The City should achieve carbon neutrality in its operations by 2015. This requires cataloging all City non-renewable energy and fuel use and purchasing renewable energy certificates and offsets. By 2020, the City should aim to obtain all of its electricity from local renewable sources and move its vehicle fleet primarily to electricity and non-petroleum fuels.

According to the 2000 LAP, the City's operations comprise only 0.5% of the greenhouse gas emissions of the City. Nonetheless, actions taken directly by the City to reduce its greenhouse gas footprint are important because it shows leadership and the commitment of the community to take on this challenge.

In implementing the 2000 LAP, we found that the City has already given significant attention to efforts to reduce its own footprint. For example, the City has installed low-e windows, new boilers, energy-efficient air conditioning, reflective window film, uses biodiesel, is constantly adding more efficient and hybrid vehicles to public works, City, and police vehicle fleets and purchases 100 percent wind power for the City's electricity.

We recommend that the City set a goal of achieving complete carbon neutrality by continuing to adopt significant building energy conservation measures, expanding the shift to renewable energy to reduce its transportation-associated footprint, and purchasing renewable energy certificates and offsets for all remaining emissions.

We recommend that the City should achieve carbon neutrality in its operations by 2015. Specific action items include:

- Require that all new City buildings and additions have a minimum LEED (or other) certification, and have roofs designed to accommodate solar power. Require that re-roofing projects on city buildings evaluate the feasibility of incorporating "solar-ready" features, including mounting posts and roof penetrations for conduits.
- Require ENERGY STAR appliances and equipment and EPEAT registered IT equipment in public facilities.
- Upgrade to high efficiency street lighting.

- Install solar on public buildings, including buildings owned and operated by Montgomery County where possible. Identify potential sites for solar parking lot and solar bus stop canopies.
- Create a City employee Climate Action Team to inventory greenhouse gas emissions from all municipal operations and establish an annual energy reduction target for each city department.
- Continue to purchase vehicles that help minimize the fossil fuel use of the City vehicle fleet.
- Quantify net sequestration from tree plantings on City and public property.
- Establish programs that create local opportunities for the City to purchase carbon offset credits by protecting private forestland in the City, paying for the installation of solar or energy efficiency technologies or other means that return value to the community.

TYPE OF BENEFIT

The primary goal of this recommendation is GHG reduction.

DEGREE OF IMPACT

The degree of impact is low because the City produces less than 0.5 percent of City-wide GHG emissions.

GEOGRAPHIC IMPACT

This recommendation focuses on the City, although climate mitigation impacts would be global.

COST (CITY/OTHERS)

The cost to the City would be moderate because many of the most cost-effective measures have already been implemented by the City, and offset or credit purchases are an entirely new cost.

FEASIBILITY

The necessary reduction in footprint and offset purchases are feasible and technologies and markets already exist to make both possible immediately.

FIT WITH OTHER APPLICABLE PLANS

N/A

TIMEFRAME

Additional reductions in energy use and adoption of efficiency measures should continue immediately but vehicle and appliance purchases will likely be phased in over 2-10 years and conversion to an entirely renewable energy fueled vehicle fleet is likely 5-10 years from completion.

April 30, 2010

SECONDARY IMPACTS

Leadership role (as noted under Geographic Impact) would be important at the City, County and State and possibly national level.

QUESTIONS THAT REMAIN TO BE INVESTIGATED BY CITY

None identified.

Energy Efficiency and Green-Power Purchasing

See the Energy chapter for details of this Climate Change recommendation.

Formation of Municipal Electric Utility

See the Energy chapter for details of this Climate Change recommendation.

Energy use has local, regional and global impacts. Energy costs can affect individual and larger scale economics.

within the City budget, consider using a public/private partnership.

Emissions (or lack of them) from energy use can affect local and regional air quality, and global climate change. Energy efficiency and cleaner, renewable energy options can reduce many of the negative impacts of energy use, as well as promote green jobs, energy independence and local self-reliance.

The 2000 Green House Gas inventory and Local Action Plan shows energy use by fuel source in Takoma Park. After excluding the large flow-through traffic, "The single greatest source of CO2 is the use of electricity (51 percent of the total), followed by gasoline (30 percent) and the use of natural gas (12 percent). Naturally displacement of dirty electricity is top on the list as a focus and is integral to the following recommendations

The City has completed a number of energy saving and renewable energy actions over the years of its own operations, where it was fairly easy to implement (energy upgrades in existing buildings, biodiesel fuel for some vehicles, wind power purchases, etc). At this point, the city would do well to focus on a few more larger steps, as well as help facilitate actions by residents and property owners.

Streetlight Purchase

The TFEA Recommends that the City purchase streetlights (which represents 50 percent of the city's own electricity use) from PEPCO, and upgrade lighting to more efficient varieties. Recommendations include assumption of ownership, maintenance and efficiency upgrades to save (hopefully substantially) on city lighting costs. Since capital necessary for purchase and lighting upgrades likely does not exist

Subcommittee name and recommendation	Type of Benefit ¹	Degree of Impact ²	Geographic Impact ³	Costs (City/Others) ²	Feasibility ²	Fit with Other Applicable Plans ⁴	Timeframe ⁵
NRG: Streetlights – city purchases streetlights (½ of city's electricity use) from PEPCO, takes over ownership, maintenance and efficiency upgrades to save on all of the above.	GHG, NRG, Rev	Med	City, Regional	City – High + Low	Med	Other municipalities in area looking into or have done it (Kensington, Somerset, Mt Rainier)	Implement: short Complete: medium
NRG: Solar Coop – city facilitates installation of solar electric panels on community buildings, at least partially financed by residents. (more cost-effective than individual installation and gives options for those with un-ideal roofs or tree coverage – in support of current policy to not allow tree cutting for solar installation).	GHG, NRG, Rev, (lesser Air, Strm)	Med	City (lesser Regional, National, Global)	City – Low Investors – High	Low	??	Implement: short Complete: short/ongoing
NRG: Implement house hold energy use benchmarking to promote conservation and efficiency (via sharing neighborhood or similar housing stock data)	GHG, NRG	Med	City, Global	Low	Med	Yes (?)	Implement: short Complete: short
Energy Efficiency and Green Power Purchasing: By 2012, the City should devise and coordinate a public/private partnership program to enable shared energy efficiency upgrades via an energy performance contractor. This would include a group-purchasing program to make energy-efficient technologies available to residents and businesses at a discount. It would also include an opt-in, negotiated power purchasing agreement or other arrangement for purchase of renewable energy through a third party supplier, piggy-backing onto the County Clean Rewards Program, or other similar arrangement.	GHG, NRG	High	City	High	High	n/a	Long
Formation of Municipal (Publicly Owned) Electric Utility: By 2011 the City, with support from consultants and citizens, should determine the feasibility of establishing a publicly owned electric utility to encourage use of renewable energy. The City should review various models that exist in other jurisdictions (especially electric cooperatives) and address such issues as capital outlays, local private investment structures, possible sources of external funding and/or equipment donation, estimated returns on investment, implementation/ billing options, funding and production timeline for delivery of power.	GHG, NRG	Med	City	Low	High	Medium	Long

- (1) Environmental media area impacted by recommendation: Air = Air; Bld = buildings; GHG = greenhouse gas mitigation; Hab = habitat; NRG = energy; Public Health Benefit = PH; Resilience for the community = Res; Revenue raising = Rev; Social Benefit = Soc; Strm = stormwater; Trns = transportation; Wst = waste; and All = effects on all environmental media areas.
- (2) Graded relative to other recommendations.
- (3) Geographic impacts can include Ward; City; County; Regional; National; and Global.
- (4) Degree of alignment or fit with other County, State or Regional goals/targets/activities.
- (5) Short (0-2 years), Medium (2-5 years), or Long-term (5+ years).

SUMMARY OF CURRENT PROBLEM

This recommendation starts primarily as a tool for saving money. The money savings could be allocated for near-term or future energy efficiency upgrades and clean energy purchases related to streetlights, or allocated to other green or green building and energy efforts, like paying for a staff

position. Daryl Braithwaite has been tracking this idea for a while, and has additional information and local contacts.

Data provided shows total of the city's own operations electricity use for recent years to be about 2 million kWh per year and about half of that to be used for street lighting. The city pays approximately \$227,000 per year for energy (~\$110) and maintenance costs (~\$117K) for 1,736 street lights, equivalent to \$10.90/street light per month.

For comparison (see link to report in references): Lawrence, KS (pop. 90K) pays about \$12/street light per month** to their local utility. They spend about \$500K per year on streetlights and estimate \$100-200K annual savings if they purchased them, although information is not available about what Lawrence expects to pay for the purchase and maintenance of the lights, or how long they estimate for payback).

Under the present situation, the owner of the lights (PEPCO) also provides the power. PEPCO is NOT incentivized to adopt technology that would reduce energy consumption as PEPCO makes more money the more power is consumed. While the capital expense of either retrofitting or replacing the existing lighting stock may be seen as significant from a budgetary standpoint, the payback could be very short due to the immediate and significant cost savings.

Additionally the reduction in consumption (due to efficiency) or purchase of a cleaner energy supply could reduce local air pollution and global greenhouse gas emissions. However, it is not currently known how much money could be saved by taking over maintenance costs or how much energy (and money) can be saved from efficiency upgrades. This idea should be explored more fully to figure out the costs, savings, paybacks and feasibility.

REGULATORY FRAMEWORK

The City may face some resistance from PEPCO, but the TFEA is not aware of any regulatory obstacles. Nonetheless, Council should request the City attorney investigate any potential legal impediments.

Finally, Public/Private partnerships may provide a revenue raising mechanism for the purchase.

TYPE OF BENEFIT

Money saved – City ownership could be cheaper than leasing, provided the City can get a better maintenance contract than its current arrangement.

Replacing old bulbs – can save energy and money through reduced energy use.

Reduced energy use – reduces green house gases and regional air pollution.

DEGREE OF IMPACT

Other (larger) municipalities estimate 30-50% cost savings as well as reductions in energy use.

GHG/Air #1 – Given that energy is about 50% of the City's streetlight bill, and according to one report (NYSERDA 2002, pg 6) energy use can be reduced from 400 watts to 250 watts (approximately a 40% reduction), then overall savings can be expected of approximately 20% of current energy costs as well as significant reductions in energy use.

GEOGRAPHIC IMPACT

Primarily city for money savings.

Also regional for local air pollution and global for greenhouse gas (GHG) emissions reductions.

COST (CITY/OTHERS)

Initially high, but coupled with short/medium terms savings, then reduced costs thereafter.

City – research and negotiation costs – hiring technical (and legal) expertise to plan for purchase – (save some by working with other localities such as Kensington, MD which may be attempting a purchase).

City – significant upfront capital cost for purchase, plus ongoing maintenance costs – offset by annual savings.

City – some additional money to pay for energy efficiency upgrades. (offset by energy savings of as much as 40% from NYSERDA estimate)

City – some additional money (or savings) for long-term power purchase agreement.

FEASIBILITY

High/medium – there is a lot of work but none is identified as particularly problematic and potential cost savings make the effort worthwhile.

FIT WITH OTHER APPLICABLE PLANS (CITY, COUNTY, STATE, REGION)

Need to find out what other local municipalities are doing.

TIMEFRAME

Implement – short – this prime money saving recommendation should, with confirming research, be started within next two years.

Complete – medium – rough estimate of 2-5 years.

NOTES

The City needs to gather technical knowledge to value current system and negotiate with PEPCO. It should also explore the possibility of creating a Public-Private Partnership to reduce city's capital expense, but the longer term economics of this proposal may be beneficial enough to complete the project alone.

Another possibility to explore is whether a collection of municipalities acting together could gain greater efficiencies. Our research investment can be shared, our bargaining power increases substantially, and some additional administrative cost savings could occur if, for example, an outside company is hired to administer the whole program for multiple cities.

The City should approach other similar entities in our area, – Chevy Chase; Garrett Park, Berwyn Heights, College Park, University Park, Edmonston, Kensington, Somerset, or Mt Rainier, for example. According to an informal survey taken by the TFEA, all of these jurisdictions seem to be in a similar situation as Takoma Park, The more jurisdictions the City can get involved, the more potential savings.

SECONDARY IMPACTS (POSITIVE AND NEGATIVE)

Positive Social/Quality of Life impacts. Taking ownership of the lights and maintenance may provide improved lighting “service.”

Lights on more often - for safety/crime improvements if repairs happen more quickly under our own maintenance contract.

Lights should be “dark-sky compliant” - illuminating only downward and are overly intrusive into private property, thus reducing light pollution and light trespass.

Public Safety – current lighting not maintained as well as residents want. Ownership and closer management of maintenance contractor allows City to ensure better lighting maintenance and coverage, and therefore better safety.

- Positive - GHG/Air pollution reduction #2 - The city could investigate long-term power purchase agreements to source cheaper and cleaner energy electricity (direct wind power, or other – not just Renewable Energy Credits (RECs) offsets like we do now). This could reduce emissions from whatever energy is used for street lights by sourcing energy through long-term power purchase agreement.
- Negative – Increased actual energy use – by keeping lights in better working order and adding more

(unnecessary) lights since we have greater control over them.

- Positive – taking ownership of our energy and equipment and leading the way can be both empowering and inspiring for other projects.

QUESTIONS THAT REMAIN TO BE INVESTIGATED BY CITY

Many details need to be worked out, including the following:

- (1) This effort would require some significant staff support (and likely a dedicated volunteer committee). Possibly a volunteer committee could do the exploratory work to make sure this is worthwhile, then staff could be called on to work together on the details and implementation;
- (2) What other local municipalities are doing or considering (or have recently done) the same? (e.g. Kensington, Somerset, Mt Rainier, University Park);
- (3) What would a Performance Energy Audit (like Lawrence, KS) reveal? (Quick Math below shows we're paying about the same);
- (4) What are some specific financing and payback scenarios? (enlisting help from National Council for Public-Private Partnership, should outside financing be necessary);
- (5) What are options for long-term power purchase agreements? Of conventional and clean energy? Especially when half of it should be deeply discounted off-peak, night time commercial rates? (Is 1-2m kWh/year a scale appropriate for this?);

LIST OF REFERENCES

- (1) Daryl Braithwaite, Director of Public Works, Takoma Park, MD
 - We pay about \$227K a year for streetlights (amounting to 1,021,378 kWh in FY09) - electricity use as well as the mandatory maintenance charges levied by PEPCO.
 - We have about 1,736 streetlights (need better accuracy on types/qty of lamps that includes)
 - We currently purchase the energy for our streetlights through Washington Gas Energy Services - through a cooperative power purchase with Montgomery County. We pay \$0.09278 per kWh.
- (2) 2009 Report from the city auditor in Lawrence, KS: http://lawrenceks.org/auditor/2009/street_lights It makes a strong argument for cities purchasing street

lights from utilities on purely economic grounds (see Section 7 in particular). "Cities that purchased street lights from utility companies reported significant annual savings and better control over street lighting. Cities can reduce costs because they typically have lower financing costs, may have lower installation and maintenance costs, and do not earn a financial return like a utility company." Then, citing the experience of several other cities, the auditor estimates that an annual savings of 30% or more would be gained by purchasing street lights. Of course, there would be the upfront purchase cost to consider, but even then, cities like Lenexa, KS (pop. 45K) expect to annual savings of 20% until the purchase is paid off, then 50% thereafter.

- (3) Seth W. Miller Gabriel, Deputy Executive Director, National Council for Public-Private Partnerships, 2000 14th Street North, Suite 480, Arlington, VA 22201, phone: 703.469.2233 fax : 703.469.2236 cell : 240.899.8499 web: www.ncppp.org.
- (4) 2002 Report from NYSERDA (NY Energy Smart program) on efficient street lights for municipal and elected officials. Includes: "a list of street lighting sites "<http://www.rpi.edu/dept/lrc/nystreet/how-to-officials.pdf>": <http://www.rpi.edu/dept/lrc/nystreet/how-to-officials.pdf>.
- (5) A second report from NYSERDA is for planners and engineers: <http://www.rpi.edu/dept/lrc/nystreet/how-to-planners.pdf>.
- (6) <http://www.energyservicescoalition.org/resources/whatis.htm> provides an overview for a potential street light purchase, replacement, and management partnership. For such a deal, the city could leverage its tax exempt status for purchasing materials, the ESCO would provide the program and personnel for installing and servicing the lights. The city could also purchase its own energy.
- (7) Debra Sachs was hired for four days in Feb 1999 by Mt Rainier and Takoma Park to give guidance on outdoor lighting. She contributed 3 pages to the 2000 Local Action Plan, which doesn't give many numbers. (and the appendix with her detailed report has been located – but not reviewed yet.)
- (8) Other municipalities nationwide that have done this (as listed in Lawrence, KS report, section 7) –

Kansas City, MO; Binghamton, NY; Manchester, CT; and Lenexa, KS reporting 30-50% annual savings.

- (9) Master Sales Agreement from PEPCO: http://www.eswr.com/tfea/streetlights_pepcoMSA-muncips.pdf
- (10) Latest PSC rates: http://www.eswr.com/tfea/pepco_psocrates.pdf

QUICK MATH NOTES

**For Lawrence, KS – believed to be \$12/month, if one takes \$500K, divides by 3,500 streetlights = \$140/light, divided by 12 months = \$12/streetlight/month.

For Takoma Park - \$227K divided by 1,736 streetlights is \$130.76 / light, divided by 12 months = 10.90/streetlight/month.

Electricity Generation cost for TP – 1M kWh X \$.09278/kWh= \$92,780 – this combined with delivery charges~\$20K is 50% of total bill PEPCO collects. The other ~\$110K+ is on leasing/maintenance.

NYSERDA numbers 2002 (from page 6) - \$5368 20 year annualized cost for installing and operating 12 "efficient" street lights divided by 12 = 447.33/street light divided by 12 months = 37.28. Their "inefficient" lights were 6271/12 = 522.58 divided by 12 = 43.55. Seems to have yearly costs averaged out to about 1/3 each for installation, energy use and maintenance.

Whereas our numbers show something like: 45% energy, 55% maintenance and leasing. (we don't have any ownership/installation numbers).

Solar Cooperative

The TFEA recommends that the City facilitate installation of solar electric panels on community buildings, at least partially financed by residents (more cost-effective than individual installation and gives options for those with less than ideal roofs or tree coverage – in support of current policy to not allow tree cutting for solar installation).

There are many residents in the city who would like to "go solar" but: 1. have too many trees, 2. have unideal roof slope and/or orientation, 3. live in the historic district, 4. don't have enough money for a standalone residential system, 5. don't own their own house or, 6. might like some hand-holding for such an investment.

By facilitating large-scale solar installations, the city could assist residents in gaining access to large (and sometimes flat) rooftops in the community, which can afford greater economies of scale making the investments more cost-effective. With a tight budget, this is a way that the city can support solar without laying out its own capital investment funds. The money for the project(s) can be raised through citizen and institutional investors, and possibly through a public private partnership. Depending on the deal, the city could even earn a commission or get free, solar electricity in exchange for leasing or hosting project space.

Typical large scale installations would be on the order of 50-100 KW or greater depending on site details. (compared to typical residential installations of 1-5 KW).

REGULATORY FRAMEWORK

There are several administrative barriers to implementing such a program. It's not clear yet if there are regulatory barriers. Aggregating individual grants and tax credits, as well as figuring out how payments and/or how energy credits would be issued to investors needs to be worked out, as well as official ownership, decision-making and maintenance responsibilities. Two models that could be considered are:

- (1) community/virtual net metering where shares of the project are owned by investors and money or electricity credits are issued back onto their individual bills. St George, UT is one example where this is working, but they also have their own municipal utility).
- (2) Small LLCs – SEC rules dictate special rules after 35 separate individual or institutional investors. By creating several small LLCs, each installation group/project can fall below the requirement and operate independently. (University Park is exploring this option).

TYPE OF BENEFIT

Greenhouse Gas reductions – each kilowatt of installed solar panels will reduce carbon emissions significantly, the amount depending on what type of power is replaced by the solar capacity (note: solar power generated most at peak usage times tends to displace dirtier power production. Calculations of average emissions reductions will thus be underestimating CO2 reductions.)

Energy – each kilowatt (kW) of installed solar panels will reduce energy use (and associated emissions) coming from the grid by about 1,257 kWh per year. (source: <http://www.solar-estimate.org/>)

Money – with grants, rebates, tax credits – financial paybacks can be in the 10-20 year timeframe with savings on energy costs thereafter. (Typical residential installations without the economies of scale will take longer for paybacks.)

DEGREE OF IMPACT

Medium – There are other efficiency and conservation efforts that can produce more bang for the buck, and should be done in tandem, if not BEFORE, lots of solar investments.

GEOGRAPHIC IMPACT

City – this could be a great community building investment vehicle.

Region – there are quantifiable reductions in local air pollution through displacement of dirty fossil fuel power.

Global – there are quantifiable reductions in global greenhouse gas pollution.

COST (CITY/OTHERS)

City – Low – at least some and maybe a good deal of administrative support required, but no capital outlay.

Investors – Med/High – depending on the grants, tax credits and financing options available. In the 10-20 year timeframe (if not sooner), investors should see financial paybacks. Before financial incentives: typical costs are \$10/w installed for small residential <2KW systems. \$9/w for large residential >2KW systems. And \$8/w or less for larger scale installations. (source: <http://www.solar-estimate.org/>)

FEASIBILITY

Low/Medium – there's a lot of work involved by someone (be it the city or individuals organizing or possibly an outside consulting group). Working with the utility and gov'ts is likely very time consuming.

FIT WITH OTHER APPLICABLE PLANS (CITY, COUNTY, STATE, REGION)

Other people in the area are looking to do similar projects (University Park and Mount Pleasant Solar Coops, to name a few), so there may be opportunity to coordinate and help pave the way for regional projects like this.

TIMEFRAME

Implement: short – once the organizing structure is figured out, gathering investments and the installation of panels could be pretty quick.

Complete: short/medium – additional projects could be rolled out periodically as investor demand accumulates for each project and available roof space.

SECONDARY IMPACTS (POSITIVE AND NEGATIVE)

Positive – regional air and water pollution reduction as result of displacing dirty fossil fuel energy at peak demand periods in the middle of the day (especially in the summer).

Positive – conventional wisdom says trees should not be compromised for solar panels, a solar coop could provide a community location to install panels for those with too much tree cover.

Positive – renters and smaller investors could buy in at lower levels than if they were considering their own installation.

Negative – an emphasis on producing relatively expensive solar energy could displace more cost-effective and sustainable efforts to reduce energy use and improve energy efficiency.

QUESTIONS THAT REMAIN TO BE INVESTIGATED BY CITY

What would legal ownership and practical administrative structure and financing be? (could be worked on by volunteers or consultants)

With flat roof top installations, is there a way to be more visible or do more outreach communications about the project(s)?

What are ideal project locations? (community center/library – minus 10.5 KW system just installed for auditorium, new PW buildings, PBES, new TPES, TPMS, other...)

LIST OF REFERENCES

- (1) Mt Pleasant Solar Coop – Anya Schoolman - <http://www.mtpleasantsolarcoop.org/>
- (2) University Park Solar Coop - <http://communitysolarcoop.com/index.htm>
- (3) Solar System Estimate site - <http://www.solar-estimate.org/>
- (4) Photovoltaic Output Calculator (developed by NREL) - <http://www.pwwatts.org/>
- (5) Roof space estimator - <http://www.roofray.com/map> (you can see some potential systems I mapped in Takoma Park)

Create Energy Use Benchmarking

The TFEA recommends that the City either create an energy-use-benchmarking system or utilize an existing

commercial system. Homeowners and other building owners would be encouraged to submit data on monthly electricity and natural gas use along with data about the type of building, size, and location. Data would be compiled and posted to the web. Other citizens could check their own energy use against that of similar buildings to encourage them to take actions to reduce energy use (this approach could also be expanded).

The City should also develop a web site with energy and water efficiency information that includes actions that homeowners and building owners can take and links to audit/retrofit information. Energy Star allows building owners to benchmark against similar facilities nationwide; this system will encourage neighbors to compare with neighbors and collectively improve energy and water use performance.

Homeowners and other building owners often do not realize the levels of energy savings that can be achieved for their type of home or building. The benchmarking tool will allow them to see the levels of energy efficiency their neighbors have achieved and will be motivated to take actions to improve their home or building performance.

REGULATORY FRAMEWORK

Steps should be taken to protect the privacy of participants, perhaps by listing the block of each participating building. City may negotiate with Pepco and Washington Gas to allow building owners to have energy use data released directly to City to make data collection more efficient.

TYPE OF BENEFIT

Green house gas and energy reductions.

DEGREE OF IMPACT

Medium, depends on extent to which the benchmarking is promoted and used.

GEOGRAPHIC IMPACT

City-wide.

COST (CITY/OTHERS)

Relatively low. Would require some staff time to organize and maintain.

FEASIBILITY

High.

Fit with other applicable plans.

n/a

TIMEFRAME

Could be implemented within a year.

SECONDARY IMPACTS (POSITIVE AND NEGATIVE)

Enhanced understanding of the levels of energy efficiency that can be achieved.

Increase motivation of homeowners and building owners to achieve efficiency.

May need to update data as building energy use changes.

QUESTIONS THAT REMAIN TO BE INVESTIGATED BY CITY

MOU with Pepco and Washington Gas, and WSSC to ease collection of monthly use data.

List of References

- (1) http://www.energystar.gov/index.cfm?c=assess_performance.benchmark
- (2) <http://energybenchmarking.lbl.gov/>
- (3) <http://opower.com/> -as heard on NPR, they estimate savings of 2-3% just by giving users good information about their energy use.
- (4) NRG Appendix F – Chevy Chase rebate forms

Energy Efficiency and Green-Power Purchasing

By 2012, the City should devise and coordinate a public/private partnership program to enable shared energy efficiency upgrades via an energy performance contractor. This would include a group-purchasing program to make energy-efficient technologies available to residents and businesses at a discount. It would also include an opt-in, negotiated power purchasing agreement or other arrangement for purchase of renewable energy through a third party supplier, piggy-backing onto the County Clean Rewards Program, or other similar arrangement.

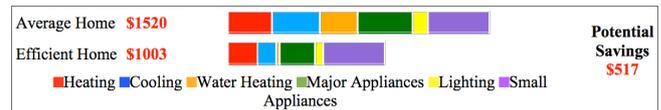
The 2000 LAP recommended establishment of a Group Purchasing Program for Energy-Efficient and Renewable Energy Technologies. We continue to recommend establishment of such a group, but as just a first step toward adoption of a more comprehensive program for broadening financing opportunities for such technologies in the area. Several new financing mechanisms have become available at the state and federal level, and the City is in an excellent position to leverage such mechanisms to increase availability of funds to local electricity consumers to both lower the amount of electricity used and shift the composition of electricity used to more on-site renewable power generation.

SUMMARY OF THE PROBLEM

Energy efficiency upgrades are generally considered the “low hanging fruit” in GHG reduction methods. Simple and effective technologies already exist and can be rapidly deployed, with ancillary economic benefits in the form of economic stimulus and increased job production in green technology sectors. The challenge lies in increasing adoption of these technologies. A first step is creation of a “buying group” that negotiates discounted products and offers them for sale to local residents and businesses.

According to Lawrence Berkeley Lab’s Home Energy Saver Calculation, the average home in the 20912 zip code could potentially gain \$517/year from adoption of a suite of energy-efficiency measures. The primary obstacle to adoption of such technologies is up-front cost. Although energy efficiency technologies pay themselves back within a reasonable period of time when viewed from the perspective of the lifespan of housing stock, many homeowners don’t have the up-front capital cost, or worry that they will move before upgrade costs are repaid, leaving future owners to reap benefits that current owners have paid for.

Energy Bill for Homes in Takoma Park, Maryland Based on the zip code you entered, here is a comparison of the energy costs (in \$/year) of an average home and an energy-efficient home in your area.



Ultimately, comprehensive financing mechanisms are required that both reduce up-front costs and provide financing mechanisms that increase adoption by spreading cost repayment over time.

REGULATORY FRAMEWORK

“Clean Loan Energy Funds” have become increasingly popular over the past few years. Clean loan funds create a pool of money that is available to residents or businesses to finance clean-energy upgrades and energy efficient improvements. Under a “Property Assessed Clean Energy” (PACE) program, the costs are repaid through adjustments to the property tax assessments in an amount that approximates energy cost savings. Once the loan is repaid, the property tax is re-adjusted, and the homeowner continues to enjoy the energy efficiency savings. The PACE program therefore attaches the obligation to repay to the property, not to the homeowner,

which allows both the payment and the value of the retrofit to transfer from one owner to another.

In April 2009, Montgomery County enacted the Homeowner Energy Loan Program (HELP), which is a PACE program. This effort does not appear to have been financed, however, by the County to date.

Maryland is currently exploring the possibility of a state-level PACE program, and legislation has been introduced in the state legislature that would enable property tax assessment (PTA). Start-up funding is available through the U.S. Department of Energy and may also become available through the State program; when returns on investment of early loans begins to come in, the fund should be self-sustaining.

Although enabling legislation for PTA is expected, an alternative financing approach would be for homeowners to pay for energy improvement retrofits through their utility bills, particularly if a local utility is established as recommended below.

The City of Takoma Park should take the lead in establishing a PACE-like "Clean Loan Energy Fund" and securing federal or state financing for its resident. The City of College Park is also exploring establishment of a PACE-like program.

DETAILED EXPLANATION OF RECOMMENDATION

The City should create a financing mechanism to facilitate adoption of energy efficiency and renewable energy technologies among residential, commercial, and institutional electricity consumers. Such a program would provide up-front capital support for green technology improvements that is then paid back over time through binding contractual arrangements between consumer and City. Ideally, the City should explore establishment of a PACE program. In the interim, a group purchasing program for products such as home appliances, windows, on-site power generating equipment, and heating and cooling equipment should be established to lower the costs and increase adoption for consumers who are already able to front the capital costs themselves.

TYPE OF BENEFIT

The goal of this recommendation is GHG reduction through reduced energy use and changing composition of energy used toward on-site, renewable energy with lower GHG content.

DEGREE OF IMPACT

It would have a high impact because roughly 50% of Takoma Park's GHG emissions come from electricity generation.

GEOGRAPHIC IMPACT

The program could benefit all property owners within the City limits. The benefits from GHG reductions would be shared globally.

COST (CITY/OTHERS)

Because loan funding should be secured from other sources, the cost of the program will be the costs of establishing the program and administering the loans. The up-front costs of a buyer's program are likely low, and with lower impact, while the up-front costs of the full PACE program are likely high, though returns on loans made should sustain the program once the program is established.

FEASIBILITY

Clean energy loan funds are being established by communities throughout the country; the feasibility of implementing this recommendation is high.

FIT WITH OTHER APPLICABLE PLANS

N/A

TIMEFRAME

The establishment of a buyer's group could be implemented in a short time period. The creation of a PACE program would likely take 2-2.5 years to develop and make funds available.

SECONDARY IMPACTS

The City may learn of new technologies or methods for reducing electricity costs or reducing environmental impacts related to its electricity use. Stimulation of the green energy sectors would result in job creation nation-wide as well as locally through administration of the program and in the retrofit, construction sectors, and clean energy supply sectors.

QUESTIONS THAT REMAIN TO BE INVESTIGATED BY CITY

The City will need to determine, based on legislative outcomes this spring, the extent to which municipalities are empowered to use PTA, and how/whether a municipal PACE program will fit with a proposed State program, should one emerge.

LIST OF REFERENCES

- (1) <http://pacenow.org/>
- (2) <http://www.grist.org/article/2010-01-26-how-innovative-financing-is-changing-energy-in-america>

(3) <http://www.renewfund.com/pace/for-governments/how-to-implement>

(4) http://www.montgomerycountymd.gov/Apps/Council/PressRelease/PR_details.asp?PrID=5473

Formation of Municipal Electric Utility

By 2011 the City, with support from consultants and citizens, should determine the feasibility of establishing a publicly-owned electric utility to encourage use of renewable energy. The City should review various models that exist in other jurisdictions (especially electric cooperatives) and address such issues as capital outlays, local private investment structures, possible sources of external funding and/or equipment donation, estimated returns on investment, implementation/billing options, funding and production timeline for delivery of power.

The 2000 LAP recommended creation of a municipal (publicly-owned) electric utility. This new recommendation urges the City to study the feasibility and environmental impact of such an action. The original recommendation from the LAP was not specific to whether the utility would generate its own electricity or purchase electricity generated elsewhere; whether the utility would supply only the City's operational electricity needs or offer electricity to all Takoma Park users; and whether the City would only supply electricity or also distribute it. This recommendation urges study of those possibilities as well.

SUMMARY OF PROBLEM

According to the LAP, just over 50% of Takoma Park's GHG emissions come from electricity use. Therefore, reducing the use of electricity and reducing GHG emissions from the electricity that is used are both critical to reducing GHG emissions. Although Takoma Park residents can buy lower emissions electricity from various suppliers, this option is often expensive and, therefore, often not adopted.

The 2000 LAP, pp. 5-6 to 5-16, also recommended creation of a municipal utility whose purpose is to reduce the environmental impact of the Takoma Park electric supply. We believe the City should work to determine whether this option is feasible and desirable. Initial data suggest that such a utility might actually reduce energy costs for the City and may well be both feasible and desirable.

Locally generated power may be less expensive than power purchased from commercial sources. It may also emit significantly less GHG, even when using fossil fuels such as natural gas, because the efficiency is much greater: what would traditionally be waste heat for power

produced at a large, distant electricity generating unit can be used to heat and cool nearby buildings.

Ideally, the new utility would rely on renewable energy resources to the maximum extent feasible. Even though the City currently purchases renewable power, locally generated power is much more efficient due to fewer line losses. It also negates the significant environmental impact from construction of new transmission lines to connect new renewable sources to the existing energy grid.

REGULATORY FRAMEWORK

According to the 2000 LAP, Maryland law allows municipalities to create municipal utilities without further regulatory approval if the utility serves only the municipal needs, meaning the needs of City operations. This municipal need is a very modest component (less than 1%) of the overall electricity demand in Takoma Park. Still, a very small generating unit could be created that might power just the City's operations.

The City would likely need approval of the Maryland Public Service Commission to provide power to non-City purchasers. There would be some economies of scale in providing power to a large group of purchasers.

TYPE OF BENEFIT

The goal of this recommendation is GHG reduction. If the power generated was renewable, it may reduce other environmental impacts as well.

DEGREE OF IMPACT

It would have a high impact because roughly 50% of Takoma Park's GHG emissions come from electricity generation.

GEOGRAPHIC IMPACT

The impact could be constrained to just the City's operations or much broader. The benefits from GHG reductions would be shared globally.

COST (CITY/OTHERS)

The cost is likely high, although it is uncertain until the scope and type of utility created is determined. The cost of implementing this recommendation—to study the issue—is likely low.

FEASIBILITY

As with the costs, the feasibility of creating the utility depends in large part on the scope and type of utility created. The feasibility of implementing this recommendation—to study the issue—is likely high.

FIT WITH OTHER APPLICABLE PLANS

This is a fairly visionary and unique approach. We are not aware of other Maryland municipalities studying this issue. To the degree a utility is created that reduces GHG emissions, it would help implement other plans aimed at GHG emissions reduction.

TIMEFRAME

The core of the recommendation—to study the issue—could be implemented in a short time period. The creation of any utility would likely take a long period of time given the complexities to be resolved.

SECONDARY IMPACTS

The secondary impacts of conducting the study are likely minimal. The City may learn of new technologies or methods for reducing electricity costs or reducing environmental impacts related to its electricity use. The secondary impacts of actually creating a utility would very much depend on the scope and type of utility created.

QUESTIONS THAT REMAIN TO BE INVESTIGATED BY CITY

This recommendation encourages the City to study all issues surrounding creation of a municipal (publicly-owned) electric utility.

LIST OF REFERENCES

Takoma Park, MD, “Local Action Plan for Reducing Greenhouse Gas Emissions” (Feb. 2000).



Takoma Park is graced with a good population of mature native trees - many more than a century old. These trees provide diverse benefits including protecting local rivers and the Chesapeake Bay from stormwater runoff, providing habitat for wildlife, reducing the heat island effect, and reducing energy demand from air conditioning in the summer months. American Forests reported in 2002 that Takoma Park's trees provide \$6.7 M in stormwater benefits and \$163 K in air pollution benefits each year.

Most of the large native trees in Takoma Park were part of natural forest cover that was retained when houses were built. As a result, much of the native insects, plants, and wildlife are still intact, albeit with a fair amount of human influence and impacts in many neighborhoods. It is important to preserve and enhance these natural systems.

The Takoma Park Committee on the Environment conducted a microclimate study in the summer of 1999 by placing two identical electronic weather stations one mile apart. One was placed in a treed backyard and the other was placed on a police trailer in the Langley Park shopping center parking lot. Temperature, humidity, wind speed, and rainfall were reported automatically to computers.

The data showed that on a typical summer afternoon, ambient temperatures in the treed backyard could be 12 to 14 degrees cooler during the day and 2 to 4 degrees cooler at night than in the parking lot. Trees can cut the cooling load by half—a house at 90 degrees would have twice as many cooling degree days as one at 80 degrees. Each house in a neighborhood with mature trees will use 3,400 BTU less for cooling per house per degree day.

The Council should set aggressive tree canopy goals, including plans for replacement of trees, and continue to monitor the operations of the tree program to ensure those goals are met. Completing an inventory of both public and private trees and accurately tracking tree removals and replacements on public and private lands will help the Council form a baseline to inform its oversight function.

Open Space funds are available to the City each year from a transfer tax which is paid whenever a property ownership is transferred (i.e., the property is sold). City Council has directed investments in open space over the past decades, acquiring wooded lots for conservation, advocating for MNCPPC land to be dedicated to conservation areas, issuing conservation easements on private lands, and

managing the Sligo and Poplar Mills properties after they were acquired by MNCPPC for conservation. Other investments include City parks and tot lots which are managed for active recreation while maintaining mature trees and natural features and installing native trees and plants. One stream has recently been daylighted (Spring Park) and at least one rain garden recently installed (Forest Park).

In 1994 and 1995, the City used a citizen volunteer committee, the Open Space Committee, to inventory every undeveloped lot in the City in the early-1990s, evaluate each lot based on established criteria to determine suitability for open space preservation or use, and make recommendations for further action. At the time, the Poplar Mills and Sligo Mills properties were in danger of being developed for townhouses. Council acted to accept the recommendations of the Committee for these two properties and another, but due to time pressures postponed action on the remaining properties. TFEA recommends that Council consider and act on these remaining recommendations.

The quality of public lands in Takoma Park is also threatened by invasive plants and overgrazing by growing deer populations. In recent years, deer populations have exploded well beyond the natural carrying capacity of MNCPPC park lands. Deer have decimated native plant populations and are expanding to residential properties, damaging landscaping and increase risk of human disease. TFEA recommends that Council encourage increased deer population control.

Another recent development is an increased interest in growing local foods. There are many benefits to citizens growing food in small garden plots and TFEA recommends that Council take steps to encourage this trend.

Environmental Issues

Trees and other native species provide millions of dollars worth of public benefits to Takoma Park each year, yet citizens often take these resources for granted. Large native trees provide many benefits—wildlife habitat, stormwater protection, energy savings, and reduction of air pollution. Council should ensure these benefits are maintained and enhanced over time. Small investments in tree and habitat protection pay high dividends.

Enhance Tree Protection Program

Enhance tree protection program for urban forest trees. The Council should take the following steps to strengthen the tree program:

Habitat Subcommittee recommendation	Type of Benefit ¹	Degree of Impact ²	Geographic Impact ³	Costs (City / Others) ²	Feasibility ²	Fit with Other Applicable Plans ⁴	Timeframe ⁵
Strengthen tree protection program by completing accurate inventory of trees on both public and private lands; setting City goals for forest cover (> 65% for suburban areas, >40% for urbanized areas); strengthening Council oversight using metrics of tree cover over multiple years or decades; shifting code enforcement for vegetation to Housing and Community Development; conducting public education of tree ordinance requirements and benefits of trees; and using "compliance assistance" for minor violations where owner willing to correct.	Hab, GHG, NRG, Strm	High	City / Global	Low	High	yes	Short
Increase tree planting by: increasing plantings of additional native trees on public property; improving the discounted tree planting program for private property; offering free or subsidized tree planting on private property; planting native trees in median strips of New Hampshire and University Avenues; and enhancing survivability of giveaway tree seedlings and city supported plantings.	GHG, Strm, Hab	High	City	Medium	High	yes	Short, med, & long
Implement Open Space preservation improvements by adopting remaining recommendations of the Reconstituted Open Space Committee for implementation; developing and implementing Management Plan for Sligo and Poplar Mills properties; removing non-native invasive plants from all municipal property; and reviving City conservation easement program to enforce existing easements and consider new conservation easements.	Hab, GHG, NRG, Strm	Medium	City	Medium	High	Aligned with	Short, implement over Long-term
Conduct Public Outreach on, for example, the value of trees, tree care and protection, retaining native tree seedlings on site, tree planting activities and plans in Takoma Park, how to reduce lawn area, damage done from driving or parking on lawns, promoting habitat for birds, bees, bats, butterflies, fireflies and other native species, and avoiding pesticides and chemical fertilizers.	Hab, GHG, NRG, Strm	High	City / Global	Low	High	yes	Implement: Short
Promote community gardens.	GHG, NRG, Strm	Medium	City	Medium	Medium	Aligned with	Medium
Encourage County to increase deer population control efforts	Hab	Medium	City/Region	Low/ Medium	High	yes	Implement: Short

- (1) Environmental media area impacted by recommendation: Air = Air; Bld = buildings; GHG = greenhouse gas mitigation; Hab = habitat; NRG = energy; Public Health Benefit = PH; Resilience for the community = Res; Social Benefit = Soc; Strm = stormwater; Trns = transportation; Wst = waste; and All = effects on all environmental media areas.
- (2) Graded relative to other recommendations.
- (3) Geographic impacts can include Ward; City; County; Regional; National; and Global.
- (4) Degree of alignment or fit with other County, State or Regional goals/targets/activities.
- (5) Short (0-2 years), Medium (2-5 years), or Long-term (5+ years).

(1) Complete accurate inventory of street and park trees. Support the Arborist in completing an accurate inventory of tree canopy/cover and use of iTree and satellite imagery computer tools to set forest cover and tree canopy goals. Support use of limited stormwater funds as needed. Use inventory to set benchmarks, goals, and plans for the tree planting program;

- (2) Extend inventory to private lands. Extend inventory to lands to promote habitat values. Use trained volunteers to assist in this effort as needed;
- (3) Set forest cover/tree canopy goals of at least 65% for each neighborhood in suburban areas and at least 40% for the more urbanized areas of Takoma Park;
- (4) Strengthen Council oversight using metrics of tree/canopy cover over multiple years/decades;
- (5) Allow Arborist to focus on tree protection by shifting code enforcement for other plants and vegetation to Housing and Community Development;
- (6) Improve public education of tree ordinance requirements and benefits trees provide. See details in Habitat recommendation 4;
- (7) Establish "compliance assistance" for minor violations where property owner willing to correct.

SUMMARY OF CURRENT PROBLEM

Takoma Park has a relatively strong tree program but it could be greatly enhanced with stronger goals and Council oversight. MWCOG and CWP recommend impervious cover of less than 25% and tree canopy cover of greater than 65% for most of the suburban areas of Takoma Park and canopy cover of greater than 40% for the more urban areas. Not all areas of Takoma Park meet these goals. Council should set numerical goals for canopy cover with interim goals to be achieved every two years. The current Council oversight seems to look at a single year and is not focusing on achieving numerical, longer term goals. The current Arborist has the skills to use tree inventory tools and track tree statistics.



Council should use this strength to establish better management controls and stewardship of Takoma Park’s urban forest resource for future decades. The Arborist’s annual report should report statistics for multiple years and note progress and trends toward identified goals.

The Arborist believes that the costs of enforcement of the tree ordinance are high so he reserves enforcement actions for only the most serious and obvious violations. Compliance assistance—telling people what the requirements are and how to comply—has been shown to be a cost-effective means of raising awareness of environmental requirements.

According to the Arborist, the City Attorney has advised that the arborist cannot provide compliance assistance to property owners in writing for minor violations, because any written violation must be prosecuted and this requires considerable resources. Further, many of the violations to City Code Chapter 12, Trees and Vegetation, are violations of the vegetation portion of the ordinance, e.g., bamboo growing within 6 feet of the property line or vegetation obstructing sidewalks.

To respond to these situations, the TFEA recommends that Council transfer enforcement of the vegetation portion of the ordinance to Housing and Community Development to allow the Arborist, the only City employee trained and assigned to tree management, to focus on protecting urban forest trees.

Further, the TFEA recommends that Council investigate allowing the Arborist to issue written compliance assistance notes to homeowners for minor violations of the tree protection portion of the ordinance. Another option would be for citizen volunteers to issue compliance assistance for minor violations. A third option would be for the Arborist to issue warnings that allow property owners 30 days to mitigate certain violations. These options would increase knowledge of, and compliance with, the tree ordinance at significantly lower costs than full enforcement.

REGULATORY FRAMEWORK

This recommendation may require minor amendments to Takoma Park Code Chapter 12, Trees and Vegetation.

TYPE OF BENEFIT

The TFEA expects this recommendation will reduce greenhouse gasses, reduce energy usage, protect and enhance habitat, reduce stormwater flow, and increase property values.

DEGREE OF IMPACT

High

April 30, 2010

GEOGRAPHIC IMPACT

City, regional

COST (CITY/OTHERS)

Low

FEASIBILITY

High

FITS WITH OTHER APPLICABLE PLANS (CITY, COUNTY, STATE, REGION)

Yes, very well

TIMEFRAME

Could be implemented within a year, continue oversight each year.

SECONDARY IMPACTS (POSITIVE AND NEGATIVE)

Improved stormwater and climate benefits from increased tree canopy cover. Citizens may see increased tree cover as a positive or a negative—public outreach can help citizens understand positive benefits that trees provide.

QUESTIONS THAT REMAIN TO BE INVESTIGATED BY CITY

How/when can vegetation code enforcement responsibilities be moved to DHCD? Is training needed for DHCD staff? How the Arborist can issue compliance assistance notes without triggering formal enforcement proceedings.

REFERENCES

Arborist reports:

<http://www.takomaparkmd.gov/clerk/agenda/items/2009/012109-3.pdf> - 2008 report

<http://www.takomaparkmd.gov/clerk/agenda/items/2008/032408-7.pdf> - 2007 report

<http://www.takomaparkmd.gov/clerk/agenda/items/2007/032607-7.pdf> - 2006 report

<http://www.takomaparkmd.gov/clerk/agenda/items/2007/arborist06rep.pdf> - 2006 additional info

<http://www.takomaparkmd.gov/clerk/agenda/items/2006/ufr2005.pdf> - 2005 report

Additional Tree Planting

The TFEA recommends the City plant additional native species of trees. Increase tree planting by:

- (1) Increasing plantings of additional native trees on public rights of way and other public property, and publicize this work to gain public support;
- (2) Continuing and improving the promotion of the discounted tree planting program on private property;
- (3) Offering free/subsidized tree planting on private property for habitat, stormwater, and energy purposes. Other jurisdictions often provide free tree planting on private lands to achieve energy savings and climate goals;
- (4) Planting native trees in median strips of New Hampshire and University Avenues. This step alone could sequester 42,000,000 BTW carbon equivalent over 10 years;
- (5) Enhancing survivability of giveaway tree seedlings by: (a) better packaging of bare root seedlings, (b) improved education of recipients on proper planting and care of seedlings, and (c) limit seedling distribution to dormant (non-growing) seasons.

SUMMARY OF CURRENT PROBLEM

The first priority of the City’s tree protection program should be to protect the City’s large native trees—these trees provide many more times the environmental benefits than newly-planted trees. Yet more trees must be planted in places where they are not naturally regenerating. The City has supported planting on some public rights-of-way. This should continue and increase.

The City should also expand its efforts to increase tree populations on private lands. Many property owners are not aware of the City’s discounted tree planting program. Other jurisdictions often provide free tree planting on private lands to achieve energy savings and climate goals. Arbor Day seedlings are often seen as a gimmick rather than the high-quality planting stock that they are. They should be better packaged for survivability and citizens should be educated on proper planting and care. Leftover Arbor Day seedlings are often distributed at other events during growing season when chances of survival are low.

TYPE OF BENEFIT

The TFEA expects this recommendation will reduce greenhouse gasses, reduce energy usage, protect and enhance habitat.

DEGREE OF IMPACT

Medium

GEOGRAPHIC IMPACT

City

COST (CITY/OTHERS)

Low

FEASIBILITY

High

FITS WITH OTHER APPLICABLE PLANS (CITY, COUNTY, STATE, REGION)

Yes, very well

TIMEFRAME

Could be implemented within a year, continue as long as appropriate.

SECONDARY IMPACTS (POSITIVE AND NEGATIVE)

Increased property values

QUESTIONS THAT REMAIN TO BE INVESTIGATED BY CITY

Should the City recruit volunteers to help with parts of this effort?

Implement Open Space Recommendations

Implement Open Space preservation improvements by:

- (1) Adopting remaining recommendations of the 1994/1995 Open Space Committee for implementation;
- (2) Developing and implementing Management Plan for Sligo and Poplar Mills properties to improve public safety, environmental protection, and public use of these properties;
- (3) Removing non-native invasive plants from all municipal property and promote invasive removal on private property;
- (4) Reviving City conservation easement program to enforce existing easements and consider new conservation easements.

SUMMARY OF CURRENT PROBLEM

As noted above, the City Open Space Committee, constituted in 1994 and reconstituted in 1995, made a number of recommendations that have never been implemented. According to an MOU between the City and MNCPPC, the Sligo and Poplar Mills properties, which were acquired by MNCPPC based on the recommendations of the Reconstituted Open Space Committee, are to be managed by the City. City action to assess, clean up, and plan for public

use of the property has been slow. The properties are relatively unprotected on many sides, which leaves the land vulnerable to dumping, vagrants, and other damaging activities. The Council should hold community meetings and other outreach to gather input on the uses and protections needed for these lands to inform the development and implementation of Management Plans for these properties.

REGULATORY FRAMEWORK

Requires consideration and resolution of Council. Implementing recommendations may require additional consideration of legal issues.

TYPE OF BENEFIT

The TFEA expects this recommendation will reduce greenhouse gasses, protect and enhance habitat, and reduce stormwater flow, and increase property values.

DEGREE OF IMPACT

Medium

GEOGRAPHIC IMPACT

City

COST (CITY/OTHERS):

Developing and implementing Management Plan for Sligo and Poplar Mills properties may need increased resources so that progress on the plan can be made more quickly.

FEASIBILITY

High

FITS WITH OTHER APPLICABLE PLANS (CITY, COUNTY, STATE, REGION):

Yes, very well

TIMEFRAME

Most could be implemented within a year, continue as long as appropriate. Sligo and Poplar Mills Management Plan could be implemented within a few years.

SECONDARY IMPACTS (POSITIVE AND NEGATIVE)

- Preservation of lands with intact natural habitat.
- Increased opportunity for hiking, nature tours.
- Reduce vulnerability of further damage to properties.
- Preserved climate mitigation impacts, stormwater protection.

QUESTIONS THAT REMAIN TO BE INVESTIGATED BY CITY

Site assessments done for Sligo and Poplar Mills properties should be reviewed to ensure they are current.

LIST OF REFERENCES

See the recommendations of the Reconstituted Open Space Committee provided at the end of this Habitat chapter.

Public Outreach

The City should conduct public outreach on the value of trees to property and community, tree care and protection (including the tree ordinance requirements and good tree protection practices), retaining native tree seedlings on site, tree planting activities and plans in Takoma Park, how to reduce lawn area, damage done from driving or parking on lawns, promoting habitat for birds, bees, bats, butterflies, fireflies and other selected native species, and avoiding pesticides and chemical fertilizers. Use volunteers to assist as needed.

SUMMARY OF CURRENT PROBLEM

Tree care workshops, news articles, and other means of public education have been effective in the past. Emphasis on this outreach has waned in recent years, however. Revival of these efforts could be a very cost-effective approach to promoting tree and habitat protection by local property owners and residents. The current Arborist seems reluctant to invest in such outreach, but his technical knowledge and enthusiasm about the value of and how to care for trees would be very effective in motivating the public to value and care for trees. Volunteer or other staff assistance could make this activity easier to implement. The Committee on the Environment has already developed a brochure about the tree ordinance.

REGULATORY FRAMEWORK

None.

TYPE OF BENEFIT

The TFEA expects improvements to City wildlife habitat resulting from this recommendation.

DEGREE OF IMPACT

High.

GEOGRAPHIC IMPACT

City/Region.

COST (CITY/OTHERS)

Low

FEASIBILITY

High

FITS WITH OTHER APPLICABLE PLANS (CITY, COUNTY, STATE, REGION)

Yes, very well

TIMEFRAME

Could be implemented within a year, continue in future years.

SECONDARY IMPACTS (POSITIVE AND NEGATIVE)

None expected.

QUESTIONS THAT REMAIN TO BE INVESTIGATED BY CITY

Recruit volunteers to assist.

Community Gardens

Promote the expansion of local production of fruits and vegetables by promoting community gardens on appropriate public land.

SUMMARY OF CURRENT PROBLEM:

Citizens have expressed the desire to grow local food. This land use would be more advantageous environmentally than other recreational uses that may require paved areas.

REGULATORY FRAMEWORK

If this practice is expanded to a new site, the City would need to work with citizens to find suitable and acceptable sites.

DETAILED EXPLANATION OF RECOMMENDATION:

Takoma Park should continue to support MNCPPC on the use of the Orchard Avenue site for community gardens. The City may explore additional sites if demand for these sites is sustained. These may include City or privately-owned sites. The City should find sites that are appropriate and acceptable to property owners and neighbors. For example, apartment owners may wish to convert some unused parking areas to gardens for use of residents. This would provide healthy outdoor activities for renters and increase their propensity to stay beyond initial lease period. City should assist if parking requirement waivers are needed for parking lot conversion to gardens.

TYPE OF BENEFIT

The TFEA expects this recommendation will reduce greenhouse gasses, reduce energy usage, protect and protect and enhance habitat. And reduce stormwater runoff.

DEGREE OF IMPACT

Medium.

GEOGRAPHIC IMPACT

City.

April 30, 2010

COST (CITY/OTHERS)

Medium/medium.

FEASIBILITY

High.

FITS WITH OTHER APPLICABLE PLANS (CITY, COUNTY, STATE, REGION)

Yes, very well.

TIMEFRAME

Could be implemented within a year, continue as long as appropriate.

SECONDARY IMPACTS (POSITIVE AND NEGATIVE)

- Reduced climate impacts due to reduced transportation;
- Stormwater benefits if paved areas are converted to gardens;
- Need to educate participants re proper use of fertilizers;
- City mulch could be used to enhance soil;
- Recreational benefits.

QUESTIONS THAT REMAIN TO BE INVESTIGATED BY CITY

City can continue to work with MNCPPC for community gardens on MNCPPC lands. City may wish to explore if any City or private sites, e.g., apartment building parking lots, are needed/appropriate for this use. Waivers of parking requirements may be needed for conversion of parking lots—City should assist with these waivers.

Deer Population Control

The City Council should encourage the County Council and MNCPPC to increase their deer population control efforts.

SUMMARY OF CURRENT PROBLEM

The deer population in Sligo Creek Park has increased substantially beyond the number that can be supported by the land. The deer have decimated native plant populations in our parks (that other species rely on), are killing young trees, and regularly destroying landscaping and gardens on private properties. High deer populations increase the risk of collisions with vehicles. Deer also are vectors for deer ticks and Lyme disease. 76% of respondents to a recent Friends of Sligo Creek (FOSC) survey believe there should be increased deer culling.

REGULATORY FRAMEWORK

The County is responsible for controlling the deer population. In Takoma Park, deer primarily live on MNCPPC lands.

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TYPE OF BENEFIT

Habitat.

DEGREE OF IMPACT

Medium.

GEOGRAPHIC IMPACT

City, region.

COST (CITY/OTHERS)

Low/medium.

FEASIBILITY

High.

FITS WITH OTHER APPLICABLE PLANS (CITY, COUNTY, STATE, REGION)

Yes, very well.

TIMEFRAME

Could be implemented within a year, continue as long as appropriate.

SECONDARY IMPACTS (POSITIVE AND NEGATIVE)

None expected.

QUESTIONS THAT REMAIN TO BE INVESTIGATED BY CITY

None.

List of References:

<http://www.fosc.org/DeerSurveyReport.htm>



Report of the Reconstituted Open Space Committee, dated 1/6/2000.

MEMORANDUM

TO: City Council

FROM: Open Space Committee
Ann Hoffnar
Terry Seamens,
Catherine Tunis
Venita Enola George, Senior Planner

SUBJECT: Amended Open Space Plan - Phase I Recommendations for the City of Takoma Park

DATE:

~~~~~  
Introduction

As you are aware, Takoma Park's Open Space Plan was adopted in 1994, in an effort to provide recommendations for future open space acquisition or other protection. Neighborhoods annexed to the City in 1995 were not evaluated. To ensure that future development compliments and enhances existing community networks, efforts have recently been made to evaluate all undeveloped lots located in the annexed areas. To accomplish this task, a citizen committee was organized by City staff. The members include the following citizen volunteers: Ann Hoffnar, Terry Seamens, and Catherine Tunis. Venita Enola George, Senior Planner, staffed the Committee.

#### Open Space Committee Goal

The goal of the Committee is to evaluate undeveloped land in the annexed neighborhoods, to identify the properties that should be acquired or otherwise preserved for open space preservation, and to determine which of these lots are suitable for conservation easements. In an effort to achieve this goal the new Open Space Committee implemented the following tasks:

Conducted field observations and prepared an open space inventory of the vacant properties (see Addendum A);  
Prepared recommendations based upon environmental and natural resources identified on the sites as well as other factors that affect the suitability of each site for open space or for development; and,  
Provided zoning recommendations for sites not meeting the criteria for open space preservation.

#### The Methodology and Criteria for Selection

The following methodology was used to locate and evaluate undeveloped properties that are located in the annexed areas of Takoma Park:

A list was developed of all privately-owned, undeveloped sites with property land area greater than or equal to 4,000 square feet. This list was compiled using computer records from the Maryland Department of Assessments and Taxation--Real Property System. All of these properties were located on a City map and numbered. Site evaluation forms were distributed to each member of the Open Space Committee prior to conducting the field observation. Each site was inspected by each member of the Open Space Committee. All site evaluation information was entered into a database in order to track all properties. Using the database, a net list of all the sites was created by eliminating all properties for which there is no such address or upon which a building is currently located.

#### Site Evaluation Factors

##### Desirable Features

Environmental Characteristics and Proximity to Adjoining Parkland  
Sensitive watersheds (water quality protection, water features preservation)  
Trees preservation and other valuable vegetation  
Wildlife habitats  
Rare ecosystems

##### Convenient Public Access

##### Aesthetic Qualities

##### Undesirable Features

Constraints (example: a dumping site, a storage site for utilities, etcetera)

##### Contextual Characteristics

Density  
(the higher the density the greater the need for open space)

multifamily - high density  
small lots - medium density  
large lots - low density

##### Service Areas

Existing open space within easy walking distance (1/8 mile radius)

##### Recreation Potential

Trail connecting between parks and roads  
Active recreation potential ( basketball, tennis courts, ballfields, playground apparatus)

Passive recreation potential ( trails, sitting areas, picnic areas)

#### The Threat of Loss Open Space

Low potential for development: deed restriction, easement, or regulatory authority protects property in its natural condition  
Average potential for development: regulatory authority does not provide adequate protection of property in its natural condition  
High potential for development: property is not protected in its natural condition, and the current owner has expressed a desire to sell or develop property in near future, or property is slated for immediate development.

#### Recommendations

##### General Recommendation:

To protect watersheds and natural features, to supplement the existing park network, and to create buffers in order to maintain the residential nature of the adjacent communities while promoting economic development in the Unification Area of Takoma Park.

##### Sites Recommended for Public Acquisition to Preserve as Open Space

Site No. : 18

Name of Site/Location:Sligo Mills

##### Justification:

To preserve the exceptional environmental values of this naturally wooded area located from the Sligo Mills Road side to the rear of the properties that face 4th Avenue.

To protect the extremely rare and large cherry and sassafras trees, as well as the many other native trees throughout the site;

To protect the watershed and its naturally wooded conditions;

To protect existing wildlife habitat

To mitigate the level of air and noise pollution in an effort to protect the residential communities from the commercial activity and vehicular traffic on New Hampshire Avenue (MD 650)

To preserve the climate change and mitigation services of the existing trees

To provide the neighborhood additional passive recreational opportunities like hiking trails and wildlife observation.

Site No. : 20

Name of Site/Location:6429 Fifth Avenue (corner of Sligo Mills Road/Orchard Avenue)

Justification: To provide the residents of the Pine Crest neighborhood with active recreational opportunities that accommodates both a basketball court and a playground.

To preserve the valuable trees on the site

Site No. : 5

Name of Site/Location:Next to 316 Circle Avenue

##### Justification:

To serve as an alternative site to site No.20 or an additional recreation site. This site also connects to the Circle

Woods conservation area.

##### Sites Recommended for City Acceptance of Conservation Recorded Easement

Site No. : 36

Name of Site/Location:Poplar Mill Subdivision

##### Justification:

Site contains mature and young yellow/tulip poplar, white oak, red maple, elm, pecan and walnut trees,

Many exotic plants.

Wildlife habitat

A creek—a tributary to Sligo Creek Watershed—which flows parallel to Poplar Avenue and under New Hampshire Avenue into a concrete channel

Tree cover provides peaceful view from a distance; close-up aesthetic qualities are limited due to heavy abundance of large and small trash throughout the site

Area serves well as a sight line buffer for residential properties located on Poplar and Fourth Avenues; and,

Area serves minimally as a stream buffer.

##### Note:

Recommended Stream Buffer Widths by Slope Range and State Water Use Designation, this site should have a 150-foot buffer from the centerline of the stream to the limits of disturbance, where 25 percent slopes are adjacent to the stream. Consequently, this site has very limited development potential unless a waiver of these stream buffer requirements is obtained. The property is not recommended for acquisition for open space due to severe degradation of site (extensive dumping) and hazardous slopes. It would be worthwhile to pursue a conservation easement for most or all of the property. It appears that the stream buffer guidelines would preclude development on most of this site.

A waiver of the guidelines would be needed even for modest development of the upland portions of the site. The City and Planning Board need to carefully consider what type of development, if any, is appropriate for this site. Any development must bring desirable, sustainable activity to the area. If re-zoned at all, commercial zoning should be granted only for developable area, not the entire property. Neighboring residents are strongly opposed to re-zoning from residential to commercial. Previous site plans had designated a large portion of this site to conservation easement.

It would not be appropriate for the City to abandon the paper street without appropriate compensation, if at all, and consideration of this issue should include future expectations of City services.

While this site would be a low priority for acquisition for open space due to its severe environmental and topography problems, it does provide some environmental services, especially due to the tree cover.

#### Improvement Suggestions

Site Nos : 19, 26, and 27

Name of Site/Location:Green space behind 6300, 6350, and 6500 New Hampshire Avenue (Trak Auto, Popeyes Carry-out, and Gas Station)

##### Suggestion:

Maintain green space in the rear of businesses to serve as a buffer between residential community and commercial activity

Site No.: 14

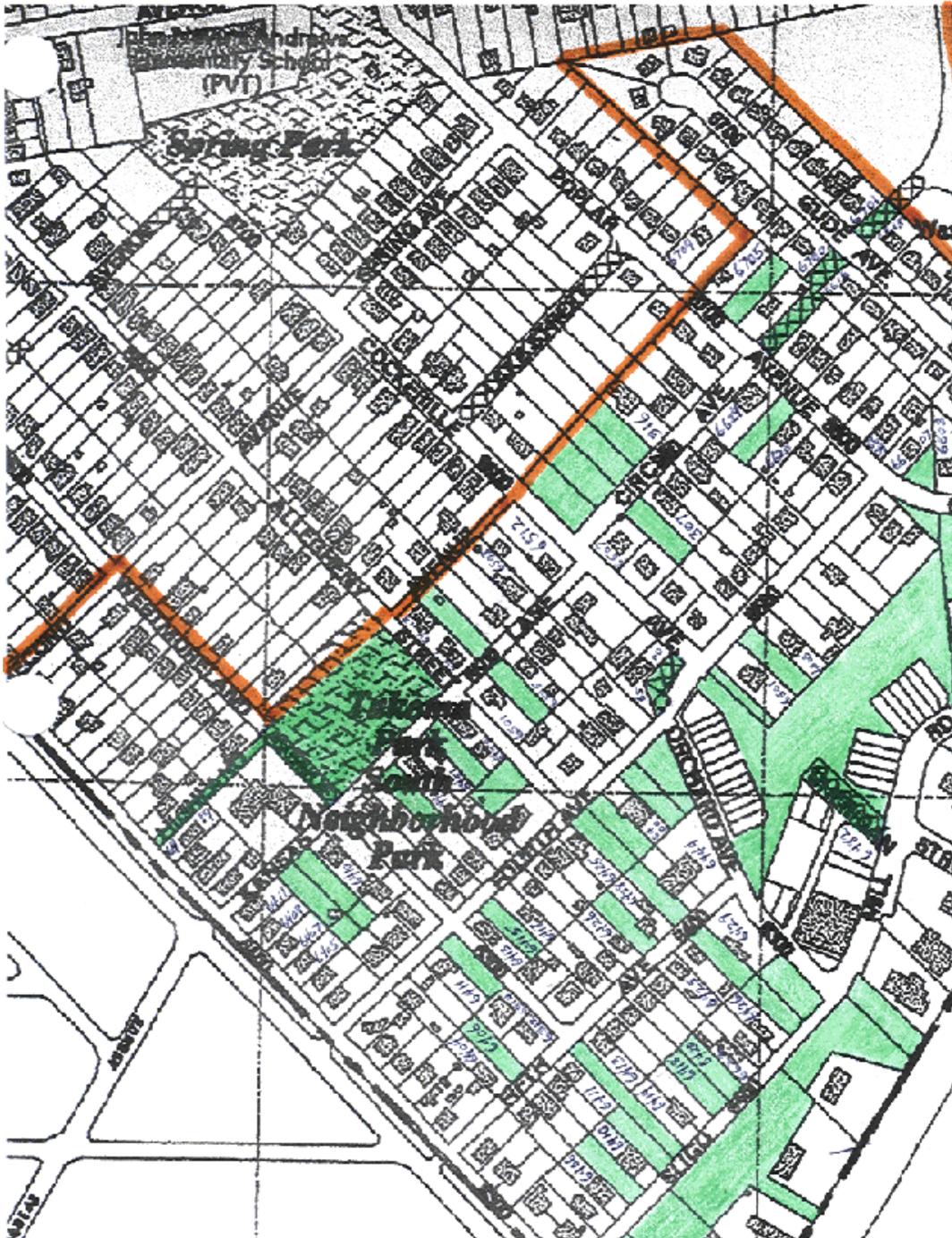
Name of Site/Location: 6405, 6407, and 6411 Eastern Avenue  
Suggestion: City determine boundary lines of residential property to ensure that available green space is not underutilized

Site No.: 31  
Name of Site/Location: Between 6501 and 6419 Eastern Avenue  
Suggestion: City should improve the pedestrian path connecting to the Takoma Park South Neighborhood Park

Site No.: 12  
Name of site/Location: Takoma Park South Neighborhood Park  
Suggestion: City encourages M-NCPPC to make improvements to the park that makes good use of the high grade elevation while preserving the valuable trees and wildlife habitat. Possible improvements to the site could include a hiking trail, an observation tower, or other recreation-related activities.

Site No.: 32  
Name of site/Location: Westmoreland Paper Street  
Suggestion: City should improve the pedestrian path connecting to the Takoma Park South Neighborhood Park

Site No.: 23  
Name of Site/Location: Westmoreland Paper Street  
Suggestion: City should improve the pedestrian path connecting to the Takoma Park South Neighborhood Park



# STORMWATER

## GOALS

- (1) Protect the Sligo Creek watershed.
- (2) Protect the Chesapeake Bay from run-off pollution.
- (3) Ameliorate public health and local environmental hazards resulting from flooding of streets, parks, and private property.

## WATERSHED FUNCTIONING

Watersheds are defined as the area where precipitation falls and collects. Sub-watersheds are parts of larger watersheds. Takoma Park falls within the Sligo Creek Watershed, which is part of the Anacostia Watershed, which is part of the Potomac River Watershed, which is part of the Chesapeake Bay Watershed, which is part of the Atlantic Ocean Watershed.

The hydrologic cycle is illustrated in the schematic below. Precipitation falls and is either evaporated, infiltrated into the soil, or it runs off into streams and rivers. In its natural state, more water is infiltrated than run off. This process

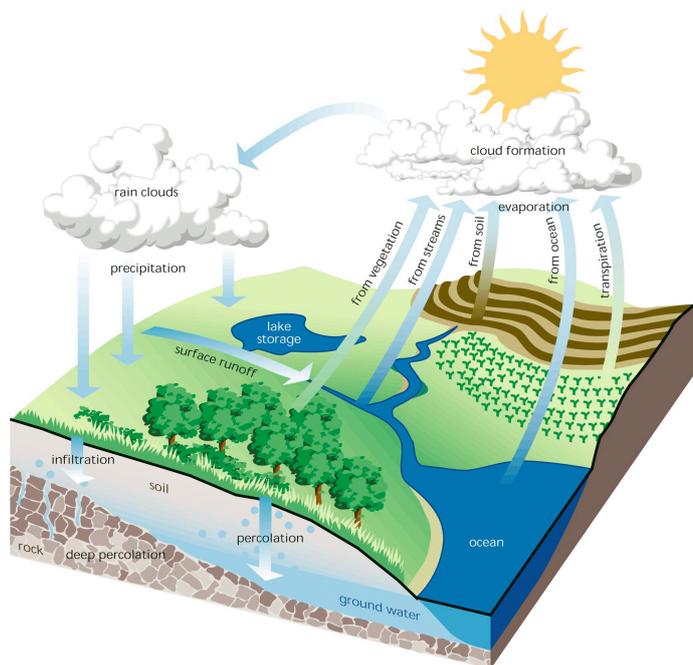


Fig. 2.2 – The hydrologic cycle. The transfer of water from precipitation to surface water and ground water, to storage and runoff, and eventually back to the atmosphere is an ongoing cycle. In Stream Corridor Restoration: Principles, Processes, and Practices (10/98). Intergency Stream Restoration Working Group (15 federal agencies)(FISRWG).

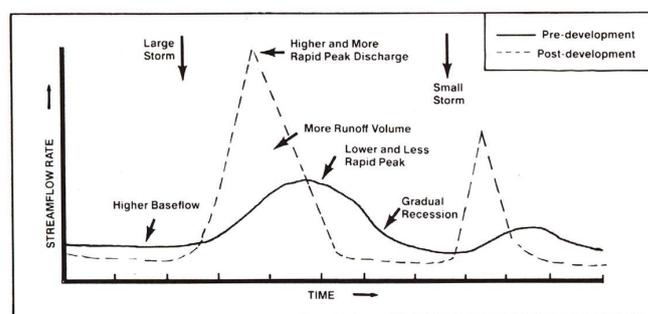
filters the water, feeds trees and plants, and recharges the groundwater that keeps streams flowing and healthy between storm events.

“The variability of streamflow is a primary influence on the biotic and abiotic processes that determine the structure and dynamics of stream ecosystems.” High levels of

stream flow can cause erosion and adequate flow is needed for fish habitat.

If more than 10% of a watershed is impervious surface, such as buildings, parking, lots, sidewalks, patios, and driveways, the hydrologic cycle, and the watershed functioning upon which it depends, is damaged. The amount of impervious surface (cover) is the best predictor of the severity of impacts to the remaining stream network. (Center for Watershed Protection, An Integrated Framework to Restore Small Urban Watersheds, p. 15, [http://www.cwp.org/Resource\\_Library/Center\\_Docs/USRM/ELC\\_USRM1v2trs.pdf](http://www.cwp.org/Resource_Library/Center_Docs/USRM/ELC_USRM1v2trs.pdf).)

Figure 2 or 3: Comparison of Urban and Rural Hydrographs A hydrograph shows the rate of flow in a stream over time



**Figure 2 or 3: Comparison of Urban and Rural Hydrographs** A hydrograph shows the rate of flow in a stream over time after a rainfall event.

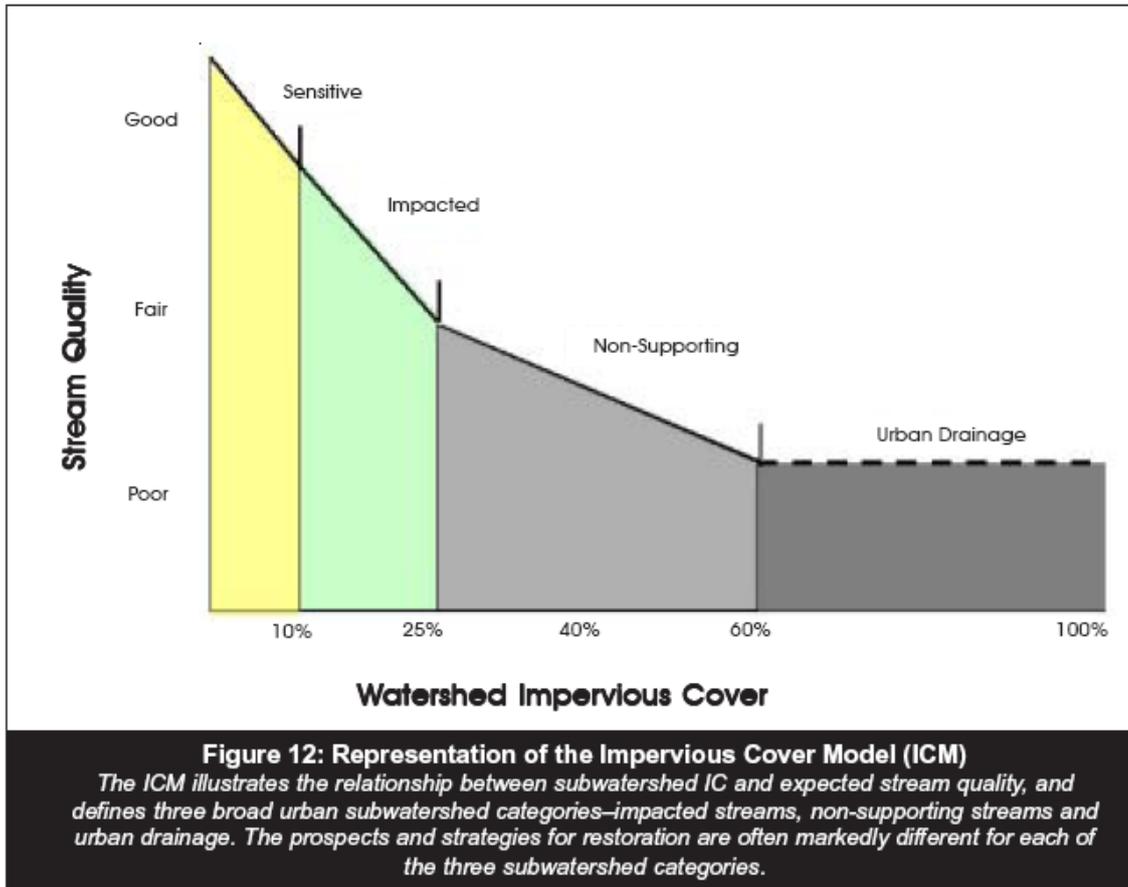
after a rainfall event. The hydrograph of an urban subwatershed (dashed line) is compared to a rural subwatershed (solid line). Note the higher and earlier peak discharge that occurs in the urban subwatershed. Source: Schueler, 1987 IBID., p. 24.

## HAZARDS OF IMPERVIOUS SURFACES.

In short, impervious surfaces damage healthy watershed functioning by preventing infiltration and increasing runoff. This decreases groundwater levels, reducing the ability to maintain healthy tree and plant cover and maintain healthy stream flow between storm events. It increases pollutant-laden runoff during storm events, increasing physical erosion and degrading stream water quality. In areas where there is more than 25% impervious surfaces, the watershed becomes non-supporting.

From CWP Manual 1, Framework to Restore Small Urban Watersheds, p.23.

In general, changes in stream quality can be tracked according to five broad indicators:



rainfall events and warmer surfaces (roads, roofs, etc.) would result in rapid increases in stream temperatures, limiting habitat suitability for native fishes and other organisms. Higher peak flows and degraded streams would also transmit more nutrient inputs and sediments to the Chesapeake Bay and its tidal tributaries, contributing to water quality

From CWP Manual 1, Framework to Restore Small Urban Watersheds, p.23.

- (1) 1. Changes to stream hydrology
- (2) 2. Physical alteration of the stream corridor
- (3) 3. Stream habitat degradation
- (4) 4. Declining water quality
- (5) 5. Loss of aquatic diversity (Ibid., p.21-23.)

impairment in the estuaries.



*Stream in good condition.*

Takoma Park's clay soils mean that stormwater infiltration is slower than in other areas. This means that holding stormwater on-site and allowing it to seep in slowly is even more important.

More intense rainfall is likely to increase peak flooding in urban environments. Continued increase in impervious surfaces attendant with development would exacerbate this problem. Aquatic ecosystems will likely be degraded by more flash runoff and increased temperatures. Intensified



*Degraded stream. Ibid., p. 28.*

Neither the Maryland nor the Montgomery County Climate Protection Plans focus on stormwater management as a key strategy in climate change adaptation. Yet we believe that stormwater management will play an important role in preparing and sustaining urban infrastructure in Takoma Park. In addition to the critical role stormwater management plays in protection of Sligo Creek and the Chesapeake Bay, one new function for stormwater management is to offset drought effects through rainwater harvesting and infiltration. These techniques would also conserve energy in the region as a considerable amount of electricity and/or natural gas are consumed conveying, treating, distributing, heating, and

cooling water from source to end user. Likewise urban forestry not only protects the watershed, it is a viable form of carbon sequestration and urban heat sink moderation.

**REFERENCES**

Montgomery County Sustainability Working Group. Montgomery County, Maryland Climate Protection Plan, 2009.

Maryland Commission on Climate Change. Climate Action Plan, 2008.

**SITUATION ANALYSIS**

As described above, stormwater pollution requires a variety of mitigation and reduction approaches. The stormwater committee looked at a variety of sources of stormwater and the pollutants contained therein and has developed a broad set of recommendations to try and address the problem.

**Stormwater Retrofit Projects**

The city has undertaken a number of innovative projects to address stormwater run-off. They include the stormwater filter in the public works facility, the reconstruction end of the end of Cleveland Ave. and the new project at Linden Ave. The city should continue to fund projects like these as the funds are available.

The city should undertake efforts to reduce the amount of run off from existing, large impervious areas. The City should consider working with large property owners to encourage and assist in converting some impervious surfaces to pervious areas through installation of pervious pavement, rain gardens, or engineered on-site stormwater retention. The City could share technical expertise with these property owners.

The TFEA recommends that the city establish a list of major potential stormwater retrofit projects and rank those projects by severity and need. In an effort to help identify problem areas, the Stormwater subcommittee requested input through neighborhood associations. The TFEA provides this list as a starting point for the city's list. This list is provided as an appendix to these recommendations

See Chapter 5 of Center for Watershed Protection Manual 2, Methods to Develop Restoration Plans for Small Urban Watersheds, for information on assembling, evaluating, and ranking stormwater retrofit projects.

**BACKGROUND**

The city has had a program of projects to reduce and ameliorate stormwater around the city. These projects have typically been funded out of the stormwater program

| Recommendation                                                                                                                    | Type of Benefit <sup>1</sup> | Degree of Impact <sup>2</sup> | Geographic Impact <sup>3</sup> | Costs (City/Others) <sup>2</sup> | Feasibility <sup>2</sup> | Fit with Other Applicable Plans <sup>4</sup> | Timeframe <sup>5</sup> |
|-----------------------------------------------------------------------------------------------------------------------------------|------------------------------|-------------------------------|--------------------------------|----------------------------------|--------------------------|----------------------------------------------|------------------------|
| <b>Increase stormwater fee</b> – to help fund stormwater and run off projects in the city.                                        | Strm                         | Low                           | C                              | Low                              | High                     | n/a                                          | Implement: Short       |
| <b>New stormwater ordinance</b> – Adopt a new stormwater ordinance that meets or exceeds state requirements                       | Strm                         | Medium                        | C                              | Medium                           | High                     | Exceeds                                      | Medium                 |
| <b>Stormwater Retrofits</b> – continue the city's program of installing stormwater control devices and the like to reduce run-off | Strm                         | Medium                        | R                              | High                             | Medium                   | Exceeds                                      | Long-term              |
| <b>Trees</b> – Promote planting and maintenance of trees for rain and stormwater absorption                                       | GHG, Strm, Hab               | Medium                        | C                              | Medium                           | High                     | Aligned with                                 | Long-term              |
| <b>Sidewalks</b> – Reduce or ameliorate runoff from new sidewalk construction                                                     | Strm, Hab                    | Low                           | C                              | High                             | High                     | Aligned with                                 | Long-term              |
| <b>Litter</b> – install more recycling containers                                                                                 | Strm, Hab                    | Low                           | R                              | Medium                           | High                     | Aligned with                                 | Short                  |
| <b>Litter</b> – support state-wide deposit legislation                                                                            | Strm, Hab                    | High                          | R                              | Low                              | Low                      | Exceeds                                      | Long-term              |
| <b>Litter</b> – Enact a Plastic bag tax within the city and/or promote one at the state level.                                    | Strm, Hab                    | Medium                        | R                              | Medium                           | Medium                   | Exceeds                                      | Long-term              |
| <b>Lawns</b> – restrict the use of herbicides within the city                                                                     | Strm, Hab                    | Medium                        | R                              | Medium                           | Low                      | Exceeds                                      | Long-term              |
| <b>Lawns</b> – Prohibit or reduce the use of chemical fertilizers in the city.                                                    | Strm, Hab                    | Medium                        | R                              | Medium                           | Low                      | Exceeds                                      | Long-term              |
| <b>Pet Waste</b> – Install signage regarding removal of pet waste from public property                                            | Strm, Hab                    | Low                           | C                              | Low                              | High                     | Aligned with                                 | Short                  |
| <b>Lawns</b> – Prohibit or reduce the use of chemical fertilizers in the city.                                                    | Strm, Hab                    | Medium                        | R                              | Medium                           | Low                      | Exceeds                                      | Long-term              |
| <b>Pet Waste</b> – Install Bag stations for pet waste around the city                                                             | Strm, Hab                    | Low                           | C                              | Medium                           | High                     | Aligned with                                 | Short                  |

(1) Environmental media area impacted by recommendation: Air = Air; Bld = buildings; GHG = greenhouse gas mitigation; Hab = habitat; NRG = energy; Public Health Benefit = PH; Resilience for the community = Res; Revenue raising = Rev; Social Benefit = Soc; Strm = stormwater; Trns = transportation; Wst = waste; and All = effects on all environmental media areas.  
 (2) Graded relative to other recommendations.  
 (3) Geographic impacts can include Ward; City; County; Regional; National; and Global.  
 (4) Degree of alignment or fit with other County, State or Regional goals/targets/activities.  
 (5) Short (0-2 years), Medium (2-5 years), or Long-term (5+ years).

See factors to be used for ranking retrofit projects in Center for Watershed Protection Manual 2, Methods to Develop Restoration Plans for Small Urban Watersheds, p 107-108, [http://www.cwp.org/Resource\\_Library/Center\\_Docs/USRM/elc\\_usrm2lsl.pdf](http://www.cwp.org/Resource_Library/Center_Docs/USRM/elc_usrm2lsl.pdf)

**Stormwater Ordinance**

The TFEA recommends that the city adopt a revised Stormwater Ordinance that is modeled on the state and the county's ordinance. Specific features of an ordinance should include the following:

- The requirement for a stormwater permit and plan for any new housing or commercial construction regardless of lot size;
- The requirement for a stormwater permit and plan for any project that disturbs over 2,500 square feet of area;
- The requirement that any development greater than 400 sf must plan for conveyance of extra runoff.
- Encourage retention of stormwater on site for groundwater infiltration;
- A limitation of 35 percent of a lot in the R-60 zone that can be covered by impervious surface and commercial zoning of 80%;
- Prohibiting the draining of stormwater to the street for any new construction;
- The requirement for a stormwater permit and plan for any addition to an existing structure that increases the square footage of the existing structure by 50%.

#### BACKGROUND

The State of Maryland is requiring jurisdictions to strengthen their stormwater management ordinances and regulations. The State has developed a model ordinance for use by cities and counties. The stormwater subcommittee has reviewed that ordinance and recommended changes in that ordinance before it is adopted by the city.

#### SECONDARY IMPACTS

- Increased regulation of city residents and property-owners;
- increased cost of construction  
Improved habitat.

#### QUESTIONS REQUIRING FURTHER INQUIRY

Additional costs incurred by complying with the new regulations

#### REFERENCES

Montgomery County zoning citation. <http://permittingservices.montgomerycountymd.gov/permitting/pdf/DevelopmentStdForR60Zone.pdf>.

Montgomery County stormwater ordinance amendment: [http://www.montgomerycountymd.gov/content/council/pdf/SCANNED\\_DOCS/20061017\\_res26-05.pdf](http://www.montgomerycountymd.gov/content/council/pdf/SCANNED_DOCS/20061017_res26-05.pdf).

### Conduct Municipal Operations Analysis

A municipal operations analysis investigates where City operations could be improved to better support watershed functioning goals. In this analysis, municipal

operations are evaluated to see whether changed practices could result in better water quality. The assessment should include:

- Street sweeping;
- Catch basin cleanouts;
- Street maintenance;
- Inspect runoff pollution hotspots and assess response to reports;
- Employee training;
- Sewage discharges;
- Municipal stewardship;
- Plan for future development (e.g., ordinance to protect watershed functioning);
- Inspect current stormwater treatment.

The Center for Watershed Protection Manual 2 provides more information on conducting a municipal operations analysis on pp. 93 and 94. ([http://www.cwp.org/Resource\\_Library/Center\\_Docs/USRM/elc\\_usrm2Isl.pdf](http://www.cwp.org/Resource_Library/Center_Docs/USRM/elc_usrm2Isl.pdf))

### Stormwater Fees

The existing stormwater fee structure generates about \$365,000 yearly for the city. This is not inconsequential, but the TFEA recommends that the city evaluate an increase in the fee in order to fund additional stormwater amelioration projects. At a current rate of \$48 per residence, a increase in the neighborhood of 20% would provide additional funding for projects. These projects can be city infrastructure, funding a Rainscapes program or providing loans or rebates to property owners for stormwater mitigation.

For homeowners, the City should fund the County Rainscapes program for City residents. Currently, City residents are not eligible for Rainscapes rebates for rain barrels, rain gardens, pervious pavement, etc., because Rainscapes is funded with County fees and Takoma Park administers its own fee structure. It makes sense, however, to use the well-developed program structure and outreach for Takoma Park. This would require funding (see increase in fee proposal) and an MOU with Montgomery County so that the County would forward any Rainscapes applications from Takoma Park residents to the City for processing.

#### BACKGROUND

The City of Takoma Park has had a stormwater fee structure in place since it took over the stormwater system from WSSC around 1988. The revenue generated by this fee structure is



used to fund operation and maintenance of the stormwater system and to fund stormwater mitigation retrofit and reconstruction projects.

*SECONDARY IMPACTS*

- Increased awareness of stormwater system
- Higher costs for residents, homeowners and property owners

**Trees**

Trees provide significant benefits to the community, including absorption of rainwater and reducing runoff. American Forests has reported that Takoma Park’s trees provide \$6.7 M in stormwater benefits and \$163 K in air pollution benefits each year. The City has a very progressive and far-reaching tree ordinance and program. The tree canopy in Takoma Park is aging and needs replenishment. The city should continue its tree programs and increase the number of trees it plants, if possible, as well as encourage the planting of new trees by property owners. Funds from stormwater fees could be used for the tree planting program.

*BACKGROUND*

Trees provide significant benefits in the reduction of stormwater by absorbing rainwater through the leaves and roots and by reducing the intensity of the rainfall. Trees also aid in soil retention, improve air quality, reduce ambient temperatures, reducing energy needs, and shade waterways, reducing the temperature of water in the summer.

*SECONDARY IMPACTS*

- Improved habitat
- Increased property values

**Lawns**

Lawn fertilizers, herbicides and chemicals run onto the streets and into our streams. According to the EPA Chesapeake Bay Program, “[a]pproximately 29 million pounds, or 10 percent, of the total nitrogen load to the Bay is due to excess fertilizer from urban/suburban areas in the Bay watershed.” (source: [http://www.chesapeakebay.net/status\\_nitrogensources.aspx?menuitem=19797](http://www.chesapeakebay.net/status_nitrogensources.aspx?menuitem=19797)). The city should consider the prohibition of the use of chemical fertilizers and herbicides that do not degrade. At the least, the city should educate residents on proper fertilization and pesticide use.

Surface waters are vulnerable to contamination by pesticides and fertilizers due to topographical factors. A watershed with steep slopes near surface water has an

increased potential for runoff as compared to a long, flat watershed. Heavy compacted clay soils without vegetation are more vulnerable to runoff than sandy-loam soils with vegetation. Avoid using herbicides in natural or artificial drains in riparian areas. Short-lived herbicides should be used in riparian woodlands and spot applied to minimize surface water contamination. Pesticide runoff can be effectively adsorbed by vegetative buffers in riparian areas that contain high amounts of leaf litter and deadwood, and by adsorption through extensive root systems. As mentioned, a soil with high organic matter will tend to adsorb herbicides more readily

*BACKGROUND*

Stormwater carries significant amounts of pollution into our waterways. Stormwater pollution is responsible for about 19 percent of the nitrogen and phosphorous in Chesapeake Bay. One source of the pollution is the chemicals that are put on our lawns in the form of fertilizers, pesticides and herbicides.

*SECONDARY IMPACTS*

- Reduced lawn care expenses by residents
- Reduced use of water for lawn watering
- Improved infiltration of stormwater for groundwater recharge

**Sidewalks**

The city has recently conducted a study of sidewalks needs. The TFEA supports the construction of sidewalks to provide for pedestrian safety and to promote walking rather than the use of automobiles, subject to the needs and desires of the neighborhoods. The city should design new sidewalks to minimize runoff and stormwater problems. The TFEA also recommends that the city construct one or more porous sidewalk projects as pilots to assess the viability and economy of porous sidewalks in the city. This should include considering the impact of pervious pavement on tree roots and use designs to minimize damage to tree roots where appropriate.

*BACKGROUND*

Sidewalks are a positive amenity for neighborhoods, but they do increase the amount of impervious surfaces, which increases stormwater runoff.

*SECONDARY IMPACTS*

- Improved habitat
- Experience with porous sidewalks
- Increased costs of sidewalk construction

## Litter

Litter is a continuing problem in the city, particularly bottles, cans and plastic bags. The city should review its littering ordinance and direct the police department to aggressively enforce the littering ordinances. The City should investigate the placement of litter catchment projects on stormwater conveyances that lead to creeks. The city should also investigate the placing of additional recycling containers in city parks and on city streets. The City should officially support a state deposit bill and a bill levying a plastic shopping bag fee such as in Washington, DC.

### BACKGROUND

Litter, particularly plastic waste, is a significant problem for our streams and waterways. Plastics float easily and never really degrade, so once they are in the streams and waterways, they are there almost forever. Plastics can also harm or kill wildlife that ingest them.

### SECONDARY IMPACTS

Improved habitat

Increased costs to consumers of a bag tax

Inconvenience to retailers of bag tax

Increased costs to consumers of a deposit tax

Increased recycling with a deposit tax

Redirection of some clean up efforts.

## Pet Waste

Many city residents are very good at picking up pet waste. Still, the impacts of pet waste on the watershed are significant. The city should enforce any pet waste ordinances to the fullest and post educational signs wherever possible. The city should make pet waste bags available in public parks and on the street in order to encourage the picking up of pet waste.

### BACKGROUND

Pet feces are a significant source of pollution and can spread disease to humans and animals. Public awareness of the hazards of pet waste has been raised, but it can still be a significant problem. Dog waste in your yard is harmful, as well, so all dog feces should be picked up.

The pollutant removal abilities of pet waste collection programs have never been quantified although there is ample evidence that programs such as these are necessary in urban areas. For example, in the Four Mile Run watershed in Northern Virginia, a dog population of 11,400 is estimated to contribute about 5,000 pounds of solid

waste every day and has been identified as a major contributor of bacteria to the stream. Approximately 500 fecal coliform samples have been taken from Four Mile Run and its tributaries since 1990, and about 50% of these samples have been over Virginia water quality standards for fecal coliform bacteria (NVPDC, 1998). A project is currently underway to pinpoint the source of bacterial contamination through DNA fingerprinting.

There is a significant amount of evidence that pets and urban wildlife can be significant bacterial sources. According to van der Wel (1995) a single gram of dog feces can contain 23 million fecal coliform bacteria. Dogs can also be significant hosts of both Giardia and Salmonella (Pitt, 1998). It was also noted in a 1982 study of Baltimore, Maryland catchments that dog feces were the single greatest contributor of fecal coliform and fecal strep bacteria (Lim and Olivieri, 1982). Water quality tests conducted for the City also reveal high levels of E. coli and Enterococcus bacteria, which warrants additional investigation by the City. This evidence points to a need for enforcement and education to raise resident awareness regarding the water quality impacts of this urban pollutant source

### COST

The cost of animal waste collection programs will vary depending on the intensity of the effort and the paths chosen to control pet waste. The most popular way is through an ordinance, but managers must consider the cost of enforcement, including staff and equipment requirements. Public education program costs are determined by the type of materials produced and the method of distribution selected. Signs in parks may initially have a higher cost than printed materials, but can last for many years. Signs may also be more effective, since they act as on-site reminders to dog owners to clean up in parks. Pollution Prevention Fact Sheet: Animal Waste Collection, Stormwater Center.net, [http://www.stormwatercenter.net/Pollution\\_Prevention\\_Factsheets/AnimalWasteCollection.htm](http://www.stormwatercenter.net/Pollution_Prevention_Factsheets/AnimalWasteCollection.htm)

### SECONDARY IMPACTS

Improved habitat

Improved pet health

## Public Education and Outreach

Reductions in stormwater runoff within the city will occur over time. There is no "big bang" approach for the city to take. The city will need to produce on-going awareness and education campaigns.

## WEBSITE

The City should create a web site that educates citizens on the concepts of healthy watershed functioning, what actions the City has taken—locations and action taken at each location, and provide information on what individual property owners can do to enhance watershed functioning on their properties. This website should include requirements of the stormwater ordinance and how to comply, how to build rain gardens and rain barrels (see fact sheets from Center for Watershed Protection and City workshops), and Rainscapes incentives that will be available once the City adopts the program.

## OUTREACH

The city should provide outreach, education and workshops on reducing stormwater runoff. These should include raingarden construction. Rain barrel workshops, construction of porous paving and sidewalks, improved fertilization and lawn care techniques and other subjects that can reduce the amount of stormwater and pollution that ends up in our waterways.

The City should provide signage for current and future projects to educate citizens on the concepts of healthy watershed functioning, what the City has done in each particular location, and where citizens can find information on what they can do on their own properties. The City has publicized some past projects in the Newsletter and should continue this practice for future projects.

## CITIZEN ACTIONS

The City should actively educate its citizens about the important role they play in watershed protection. The City website should provide advice on reducing chemical use on lawns, reducing lawn area, reducing and picking up litter and pet waste, installing rain barrels and rain gardens, and volunteering with Friends of Sligo Creek.

## FURTHER INFORMATION

Many resources are available to help understand and implement best management practices for watershed protection. The Center for Watershed Protection offers many such resources for free or low cost. These include:

Manual 1: An Integrated Framework to Restore Small Urban Watersheds, [http://www.cwp.org/Resource\\_Library/Center\\_Docs/USRM/ELC\\_USRM1v2trs.pdf](http://www.cwp.org/Resource_Library/Center_Docs/USRM/ELC_USRM1v2trs.pdf).

Manual 2: [http://www.cwp.org/Resource\\_Library/Center\\_Docs/USRM/elc\\_usrm2lsl.pdf](http://www.cwp.org/Resource_Library/Center_Docs/USRM/elc_usrm2lsl.pdf).

Manual 3: [http://www.cwp.org/Resource\\_Library/Center\\_Docs/USRM/ELC\\_USRM3.pdf](http://www.cwp.org/Resource_Library/Center_Docs/USRM/ELC_USRM3.pdf).

Takoma Park annual stormwater reports

[http://www.eswr.com/tfea/tp\\_swreport2005.pdf](http://www.eswr.com/tfea/tp_swreport2005.pdf) 2005

[http://www.eswr.com/tfea/tp\\_swreport2006.pdf](http://www.eswr.com/tfea/tp_swreport2006.pdf) 2006

[http://www.eswr.com/tfea/tp\\_swreport2007-8.pdf](http://www.eswr.com/tfea/tp_swreport2007-8.pdf) 2007-8

[http://www.eswr.com/tfea/tp\\_swreport2009.pdf](http://www.eswr.com/tfea/tp_swreport2009.pdf) 2009

[http://anacostia.net/Restoration\\_Plan/download/ActionPlans/Sligo\\_Creek.html](http://anacostia.net/Restoration_Plan/download/ActionPlans/Sligo_Creek.html) Sligo Subwatershed Plan

## Results of Stormwater Problem Areas Survey

| Location                                                                   | Problem                                                                                                                                                                                                                                                    |
|----------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Eastern & Cedar                                                            | Erosion at curb easement due to underground spring.<br>Icing/ponding on street and sidewalk.<br>Springs in yards during rain events.                                                                                                                       |
| Philadelphia & Cedar                                                       | Storm water backs up into sewer line which backs up into house. (WSSC problem).                                                                                                                                                                            |
| Philadelphia & Chicago                                                     | Pooling at bus stop                                                                                                                                                                                                                                        |
| Sligo Creek Pkwy under Carroll Ave Bridge                                  | Erosion from bridge runoff. Likely SHA problem. City should contact SHA for remedy.                                                                                                                                                                        |
| Carroll & Flower                                                           | Runoff damaging street, causing icing, dumping into Sligo Creek (no drains at this corner)                                                                                                                                                                 |
| Carroll & Columbia                                                         | Freezing water at intersection                                                                                                                                                                                                                             |
| Hancock & Sheridan                                                         | Major erosion due to exposed pipe dumping into ravine.<br>Flooding/ponding water in Opal Daniels Park.                                                                                                                                                     |
| Sherman & Maple                                                            | Clogging of storm drains.<br>Ponding in easement at corner.                                                                                                                                                                                                |
| Sherman                                                                    | Major erosion of curb easement due to driveway and roof run off in rain events.                                                                                                                                                                            |
| Willow                                                                     | Erosion from storm drain that runs through property                                                                                                                                                                                                        |
| Boston & Margaret                                                          | Clogged storm drains with sewer line back up (Sewer line backup is WSSC).                                                                                                                                                                                  |
| Spring Park                                                                | Southwest quadrant of the playing field ponds during rain and remains muddy for several days afterwards; and the east side of the playing field (basketball court) drains off a steep slope toward the playground and is eroding that slope significantly. |
| Westmoreland                                                               | Parking lot behind Westmoreland and Carroll Avenues (including the new Urciolo lot) drains directly onto the steep driveway and thence into the Westmoreland storm drain system without any mitigation.                                                    |
| 2 <sup>nd</sup> Ave between Westmoreland & Allegheny                       | Pooling of water during rain events.                                                                                                                                                                                                                       |
| Park at Crescent & Holt                                                    | Too much storm water for drains to accommodate.                                                                                                                                                                                                            |
| Park & Spruce                                                              | Clogged drains                                                                                                                                                                                                                                             |
| Birch & Dogwood                                                            | Clogged drains                                                                                                                                                                                                                                             |
| Hayward & Larch                                                            | Cut-through pedestrian path at the T-junction wet, erosion problems, needs frequent repair. Active spring in area. Run off sweeps trash into Sligo Creek.                                                                                                  |
| Hayward & Sligo Creek Pkwy                                                 | Run off to creek; erosion (MNCPPC problem?)                                                                                                                                                                                                                |
| Prince Georges                                                             | West sidewalk going down from Ethan Allen – runoff from properties creates black ice.                                                                                                                                                                      |
| Elm & Prince Georges                                                       | Forest Park rain garden flooded after major rain events                                                                                                                                                                                                    |
| Elm & Prince Georges                                                       | Run off from houses causes icing, flooding.                                                                                                                                                                                                                |
| Montgomery & Hickory                                                       | Pooling, icing                                                                                                                                                                                                                                             |
| Boyd & Jackson                                                             | Clogged drain                                                                                                                                                                                                                                              |
| Piney Branch between Eastern & Philadelphia                                | Significant silt build up under steel plates between sidewalk and bump out.<br>Corroded metal drain plate (public health issue – potential for falls) (SHA problem?)                                                                                       |
| Hillside beside Washington Adventist Hospital (WAH) along Sligo Creek path | Parking lot and service road causing run off and erosion to hillside.<br>Rogue water channels from parking lot and service road drain silt and debris to Sligo Creek                                                                                       |
| Carroll Ave in the WAH parking lot                                         | Sink hole (opened in 2008; repaired by WSSC in 2009) (Problem with sewer line?)                                                                                                                                                                            |
| Greenwood                                                                  | Active spring pumps water into the street and flows to the intersection of Carroll and Flower then down to the Creek                                                                                                                                       |
| Maplewood & Maple Ave                                                      | Large amount of storm water run off from apartment buildings.                                                                                                                                                                                              |
| Kennebec                                                                   | Large amounts of storm water flow down the street.                                                                                                                                                                                                         |
| Flower near Cherry Ave to Sligo Creek                                      | Storm water rushes to natural dip at base of road bring trash and rushing water into Sligo Creek                                                                                                                                                           |
| Jackson & Glenside                                                         | Water streaming downhill even in the absence of precipitation event.<br>Icing.                                                                                                                                                                             |
| Maple                                                                      | Run off from apartment/condominium building parking lots and drain pipe from strip mall businesses causes icing on sidewalk and hazardous conditions for pedestrians                                                                                       |
| Maple & Grant                                                              | Run off from schools causes pooling during rain events.                                                                                                                                                                                                    |
| Grant, Holly & Darwin                                                      | Icing                                                                                                                                                                                                                                                      |
| Chicago & Violet                                                           | Pooling                                                                                                                                                                                                                                                    |

## Largest Stormwater Fee Payers

The property owners who pay the largest stormwater fees based on impervious surface are provided below. The city should establish an outreach program to encourage property owners to ameliorate runoff from their property. A revolving fund to help owners of large properties could also help promote stormwater retrofit projects.

| PREMISE ADDRESS           | AMOUNT                    | CUSTOMER<br>NUMBER | CUSTOMER NAME                                                |
|---------------------------|---------------------------|--------------------|--------------------------------------------------------------|
| 7600 FLOWER AVE           | \$ 12,471.78              | 1079986            | WASH MISSIONARY COLLEGE                                      |
| 7600 CARROLL AVE          | 10,471.51                 | 1080143            | WASH SANITARIUM ASSOC/                                       |
| 7411 NEW HAMPSHIRE<br>AVE | 6,019.89                  | 1857945            | HAMPSHIRE LODGING INC<br>SAUL SUBSIDIARY I LTD<br>PARTERSHIP |
| 1101 UNIVERSITY BLVD      | 5,425.41                  | 1837624            |                                                              |
| 7505 NEW HAMPSHIRE<br>AVE | 5,131.43                  | 1857937            | HAMPSHIRE LLC                                                |
| 6822 NEW HAMPSHIRE<br>AVE | 5,018.29                  | 1902071            | SPANOS, JOHN<br>SAUL SUBSIDIARY I LTD<br>PARTERSHIP          |
| 1167 UNIVERSITY BLVD      | 4,579.19                  | 1837632            |                                                              |
| 7333 NEW HAMPSHIRE<br>AVE | 4,564.69                  | 1890508            | TENACITY 7333 NEW HAM. AVE                                   |
| 7401 NEW HAMPSHIRE<br>AVE | 4,564.69                  | 1890516            | TENACITY 7333 NEW HAMPSHIRE<br>LLC                           |
| 7620 MAPLE AVE            | 4,181.07                  | 1077395            | FRANKLIN ASSOCIATES                                          |
| 7605 NEW HAMPSHIRE<br>AVE | 3,882.06                  | 1887801            | WALGREEN CO                                                  |
| 7600 MAPLE AVE            | 3,846.91                  | 2210687            | PARK RITCHIE APTS JNT VNTR                                   |
| 7710 MAPLE AVE            | 2,837.53                  | 1066233            | MAPLE VIEW APTS LLC                                          |
| 7777 MAPLE AVE            | 2,775.45                  | 1063673            | ESSEX HOUSE LTD PTNSHP                                       |
| 7667 MAPLE AVE            | 2,645.81                  | 1080416            | PARKVIEW TOWERS PTNSHP                                       |
| 7101 NEW HAMPSHIRE<br>AVE | 2,231.82                  | 1952860            | HILLWOOD MANOR APTS JOINT<br>VENTU                           |
| 6501 POPLAR AVE           | 2,076.55                  | 1845999            | WASHINGTON-MC. CHRIS. SCH.                                   |
| 7676 NEW HAMPSHIRE<br>AVE | 2,042.50                  | 1913250            | 7676 NEW HAMPSHIRE LTD<br>PARTNERSHIP                        |
| 7520 MAPLE AVE            | 2,005.34                  | 1069681            | DEAUVILLE ASSOCIATES                                         |
| 1315 HOLTON               | 1,840.00                  | 1837343            | TAKOMA PARKLAND UP                                           |
| 7633 NEW HAMPSHIRE<br>AVE | 1,778.64                  | 1887827            | WALGREEN CO<br>WASHINGTON SANITARIUM AND<br>HOS INC          |
| 7600 CARROLL AVE          | 1,708.31                  | 2320924            |                                                              |
| 1329 UNIVERSITY BLVD      | 1,701.48                  | 1887843            | WALGREEN CO                                                  |
| 7637 NEW HAMPSIRE<br>AVE  | 1,676.03                  | 1887819            | WALGREEN CO                                                  |
| 6300 NEW HAMPSIRE<br>AVE  | 1,649.61                  | 1901677            | MH PROPERTIES                                                |
| <b>TOTAL AMOUNT</b>       | <b><u>\$97,125.99</u></b> |                    |                                                              |
| TOTAL IMPERVIOUS<br>AREA  | 2,484,040.66 SQ FT        |                    |                                                              |

# TRANSPORTATION

Transportation affects every Takoma Park resident. Cars, busses, bikes, and pedestrians all impact each other. And each of these modes of transportation has an impact on the environment. But it's the motorized vehicles that have the largest impact, and that impact is seldom positive. Dealing with transportation-related issues in Takoma Park is key to improving the local environment, and particularly noise and air quality.

Takoma Park's State roads create the biggest problems-- Ethan Allen Avenue, University Boulevard, New Hampshire Avenue. Traffic backups, enormous potholes, and terrible signal timing cause substantial pollution problems. And the City's response is often:

"There's nothing we can do about this because it's a State road."

But most cities in America have state or county roads and border other jurisdictions. Not all of these cities seem to have the difficulties expressed by Takoma Park.

The City should redouble its efforts with the State to get some serious traffic improvements. We have a State legislative delegation. That delegation should be mobilized to move the immovable state Transportation Department bureaucracy.

In that spirit, the TFEA makes the following recommendations.

## Improve Traffic Flow

Improve traffic flow (eliminate delays and their associated pollution) throughout Takoma Park, including and especially on State highways by, among other things, adopting the Takoma Park Charrette's traffic flow design for New Hampshire and particularly the Takoma Junction roundabout, as well as improving light timing throughout Takoma Park. Recommendation includes a study of light timing to ensure optimum signal timing.

## BACKGROUND

According to the Takoma Park Newsletter, "a recent study by the State Highway Administration confirms that a traffic roundabout could alleviate long waits and safety issues at Takoma Junction, the troublesome intersection of Carroll Avenue, Ethan Allen, Grant, and Sycamore."

According to the article, the study found that "a mini-roundabout would carry inherent safety advantages . . . including a low- speed environment, reduction of conflict points, and elimination of high severity crashes" as well as provide a "pedestrian friendly" environment "with short crossing distances."

| Recommendation                                                                                                               | Type of Benefit <sup>1</sup> | Degree of Impact <sup>2</sup> | Geographic Impact <sup>3</sup> | Costs (City/Others) <sup>2</sup> | Feasibility <sup>2</sup> | Fit with Other Applicable Plans <sup>4</sup> | Timeframe <sup>5</sup>                |
|------------------------------------------------------------------------------------------------------------------------------|------------------------------|-------------------------------|--------------------------------|----------------------------------|--------------------------|----------------------------------------------|---------------------------------------|
| Transportation: Improve bicycling accessibility through traffic improvements                                                 | GHG, Air, NRG, Soc           | Med                           | Ward, City, County             | Med / Med (state)                | High                     | Yes                                          | Implement: short<br>Complete: medium  |
| Transport: Improve pedestrian accessibility through sidewalks, signals, and other improvements                               | GHG, Air, NRG, Soc           | Med                           | Ward, City                     | High / High                      | Med                      | Yes                                          | Implement: short<br>Complete: long    |
| Transport: Adopt Charette traffic flow design for Takoma Junction                                                            | GHG, Air, NRG, Soc           | Med                           | Ward, City, County             | Med / High (state)               | High                     | Yes                                          | Implement: medium<br>Complete: medium |
| Transport: Work with SHA to recalibrate stop lights to keep traffic flowing. There should be a study of all of these lights. | AQ, PH                       | Medium                        | City, County, Regional         | Medium/High (?)                  | Low/Medium               | n/a                                          | Imp: Medium/Long<br>Complete: Long    |

- (1) Environmental media area impacted by recommendation: Air = Air; Bld = buildings; GHG = greenhouse gas mitigation; Hab = habitat; NRG = energy; Public Health Benefit = PH; Resilience for the community = Res; Social Benefit = Soc; Strm = stormwater; Trns = transportation; Wst = waste; and All = effects on all environmental media areas.
- (2) Graded relative to other recommendations.
- (3) Geographic impacts can include Ward; City; County; Regional; National; and Global.
- (4) Degree of alignment or fit with other County, State or Regional goals/targets/activities.
- (5) Short (0-2 years), Medium (2-5 years), or Long-term (5+ years).

The article notes that "traffic delays have long frustrated pedestrians and prompted them to cross without waiting for walk signals."

This option was thoroughly vetted with the community during the recent Charrette process. According to the City's website, "A charrette is an intensive planning session where citizens, designers and others collaborate to create a feasible master plan. It provides a forum for ideas and offers the unique advantage of giving immediate feedback to the designers. More importantly, it allows everyone who participates to be a mutual author of the plan." The Community settled upon a tree-lined boulevard for New Hampshire Avenue as well as a roundabout intersection design for Takoma Junction.

According to the Charrette and state studies, the Takoma Junction roundabout would significantly improve traffic flow and eliminate several traffic lights that now cause substantial morning and evening delays.

In addition to the improvements at Takoma Junction, it's essential that traffic-flow improvements be made along University Boulevard and New Hampshire as well as in Old

Town. The City should jointly undertake a study or studies in conjunction with the State Highway Administration to ensure optimal traffic flow.

Finally, it's important that SHA and the City fund these improvements. If money is not available currently, the City should lobby the State and federal governments to appropriate money for these specific improvements. The City Council has previously passed a resolution supporting this concept in 2005! Now is the time to put actions behind those resolution words.

#### *ENVIRONMENTAL BENEFIT*

Cars in Takoma Park produce copious amounts of greenhouse gas pollution, as well as extensive particulate matter and carbon monoxide. Cars that are not running well pollute with unburned fuel. This unburned fuel is a contributor to ground-level ozone pollution. As noted in the Air Quality chapter of this TFEA report, our area suffers from significant ozone pollution during many hot summer days.

Most of the car pollution in Takoma Park comes from cars sitting idle at traffic signals or when cars accelerate from a standing stop after they've been waiting for a light to change to green. Ensuring a consistent speed and steady traffic flow will eliminate extensive amounts of pollutants, making these traffic corridors substantially healthier for residents living nearby.

#### *SECONDARY BENEFITS*

With traffic flowing more smoothly, emergency vehicles will face less delays, making Takoma Park a safer community as well.

Additionally, the Takoma Junction roundabout will make the intersection far more pedestrian-friendly, not to mention safer. This recommendation dovetails very well with other TFEA recommendations to improve human-powered transportation.

### **Improve Human-Powered Transportation**

Takoma Park is a car-centric community that should favor pedestrian and bicycle travel to minimize negative impacts of car travel (air quality impacts / fuel use impacts / greenhouse gas emissions).

The City should work hard to Improve human-powered transportation accessibility including pedestrian and bicycle access and ensure robust enforcement against cars infringing upon pedestrian and bicycle access.

Specific improvements include:

- striping of bike lanes on highways, roads, and streets;

- construction of separate bike paths where appropriate;
- installation of sidewalks or pedestrian walkways where none exist;
- fixing rough pavement and potholes;
- maintain all bike and pedestrian routes once created; and
- increase enforcement of laws against drivers who intimidate pedestrians and bicyclists, refuse to stop at cross walks, and run red lights.

#### *SUMMARY OF CURRENT PROBLEM*

Takoma Park is a driver's paradise and a walker and biker's nightmare. Cyclists and pedestrians often utilize main roads (state highways) just as do cars; these routes are the most direct routes to a destination. Unfortunately these main roads are rough, speed bumps are numerous, signals do not trigger when bikes approach, and sidewalks for pedestrians are non-existent in certain areas and are narrow and poorly maintained in others.

If Takoma Park is serious about tipping this balance in favor of the pedestrian and bicyclist, it must take aggressive action. People will not walk or bike when they don't feel safe. And the current car-centric balance exacerbates that feeling of insecurity.

In addition to the infrastructure problems, there is a lack of enforcement against drivers who violate the rights of pedestrians and cyclists. Enforcement is an issue easily addressed by the City.

Infrastructure improvements are hampered by jurisdictional conflicts with the State. City staff often cites jurisdictional issues as the reason for not fixing potholes, painting bike paths, or improving signal timing. State highways, for example, are most often the routes used for bicycle commuters in Takoma Park. Due to this high bicycle usage, however, it's essential that the City work to actively solve problems that impact alternative transportation regardless of who has formal jurisdiction.

#### *REGULATORY FRAMEWORK*

Currently Maryland Department of Transportation and Montgomery County Parks have many of the main bicycle and pedestrian thoroughfares through the City. The City will need to take a new, aggressive approach to addressing these cross-jurisdictional issues.

Currently pedestrians and cyclists represent 13% of the fatalities on public roadways, but receive only 1% of the funding. According to a Surface Transport Policy Partnership report, “[i]n the last 15 years, more than 76,000 Americans have been killed while crossing or walking along a street in their community. Children, the elderly and ethnic minorities are disproportionately represented in this figure, but people of all ages and all walks of life have been struck down in the simple act of walking. These deaths typically are labeled ‘accidents,’ and attributed to error on the part of motorist or pedestrian. In fact, however, an overwhelming proportion share a similar factor: They occurred along roadways that were dangerous by design, streets that were engineered for speeding cars and made little or no provision for people on foot, in wheelchairs or on a bicycle.”

Substantial investment is needed to improve the conditions for pedestrian and bicycle traffic. Luckily, in the era of shrinking budgets, large grants are available for pedestrian and cycling improvements. For example, the Highway Safety Improvement Program is eligible for 90% federal funding with only a 10% match.

#### *DETAILED EXPLANATION*

Improve human-powered transportation accessibility including pedestrian and bicycle access. Specific improvements include:

- (1) Mark all major roads in Takoma Park (including state & county roads) for bicycle access. Markings can include in-lane bicycle symbols where room does not exist for separate bike lanes. Where room does exist, bike lanes should be striped and marked;
- (2) Rebuild sidewalks that are damaged/deficient to ensure pedestrian access and Americans with Disabilities Act (ADA) access for persons with disabilities;
- (3) In neighborhoods with no sidewalks, build ADA-compliant sidewalks on at least one side of the street if desired by community. Construction should be done in a manner to minimize negative secondary impacts including increased stormwater runoff. Possible stormwater runoff solutions include:
  - (d) Where appropriate, build sidewalks and/or bike lanes in existing roadways. This approach eliminates need for additional right of way and eliminates creation of new impervious surfaces. This solution also can

reduce roadway size, thus acting as an effective traffic-control measure;

- (e) If insufficient road width exists to build sidewalks and/or bike paths in current roadway, ensure that any constructed sidewalks are separated from streets by at least three feet to minimize runoff from new sidewalks. Also incorporate rain gardens or trees/vegetation in that three-foot space between new sidewalk and road;
  - (f) Where neither option (1) or (2) is possible, stormwater should be captured in detention or retention ponds and infiltrated, evaporated, or released in a controlled manner.
- (7) Improve lighting for pedestrian access at night. Lighting should utilize most energy-efficient methods and fixtures should meet dark sky criteria;
  - (8) Build separate bike paths where bicycling on roadways is unsafe. Specific roads needing separate bike paths include Ethan Allen Avenue, Philadelphia Avenue, University Boulevard, and New Hampshire Avenue. Suggest appropriating one car travel lane in each direction for bicycle lane that would be separated from main travel lanes by raised divider;
  - (9) Increase police enforcement and education efforts targeting drivers who fail to stop at cross walks, who intimidate pedestrians or cyclists, or who block pedestrian and bike access;
  - (10) Ensure maintenance of all created bike and pedestrian access. Currently, existing bike lanes are allowed to accumulate debris that can cause bicycle crashes and flat tires. Sidewalks are allowed to deteriorate so access by pedestrians and persons with disabilities is impracticable;
  - (11) Insist that contractors who tear up streets and sidewalks restore them to the same or better condition. This can easily be accomplished through enforcement of contract terms applicable to these repairs. There seems to be little to no enforcement of quality standards for street and sidewalk repairs within the City;
  - (12) Fix potholes in roads irrespective of which jurisdiction “owns” the road;

(13) Pass City law adopting the “Idaho Rule” for bicycle travel. This effective rule requires bicyclists approaching a stop sign to slow down and, if required for safety, stop before entering the intersection. It further requires cyclists approaching a red light to stop before entering the intersection, even though the light is red; and

(14) Institute a bicycle and pedestrian advisory committee with clear authority to improve the current pedestrian and bicycle access.

*TYPE OF BENEFIT*

Increasing human-powered transportation in Takoma Park will improve air quality by reducing numbers of car trips and will also reduce automobile traffic and gridlock. Finally, aside from the environmental benefit, it will make our community safer.

*DEGREE OF IMPACT*

If all parts of this recommendation are adopted, the impact to pedestrians and cyclists in the City would be enormous. These changes would encourage fewer trips by automobile and more by human-powered means. Tipping the balance in favor of bikes and pedestrians, instead of cars, would provide substantial reductions in neighborhood pollution. For each car trip eliminated, carbon dioxide, carbon monoxide and particulate pollution would be reduced. When positive impacts are averaged together, overall expected impacts are considered to be medium.

*GEOGRAPHIC IMPACT*

Positive impacts of these recommendations are expected at the Ward, City, and to a more limited extent, the County level. Certainly neighborhoods would benefit from the improved walkability. But City-wide improvements can be expected as people commute across wards traveling to and from work. Finally, there is limited but notable cross county bicycle commuting.

*COST (CITY/OTHERS)*

Cost are variable and hard to predict. As noted, above, up to 90% of the costs can receive federal subsidies for pedestrian and bicycle improvements. The City should put effort into obtaining these matching funds to minimize the impact to City budgets. Partnerships with State highways should also be sought since the most substantial impact would be to highways under State jurisdiction. Cost of new sidewalks could be substantial, whereas cost of new pavement striping would be low. Averaging these costs gives an overall medium cost to these improvements. But, as mentioned, costs to the City can be low if proper planning and effort is put into obtain federal funding.

*FEASIBILITY*

Each of the recommendations is very feasible. Communities around the Country are adding bike lanes, fixing damaged sidewalks, and creating separate bike routes. Even Washington, D.C., previously not thought of as a Mecca for bicycling, has completely reinvented itself for alternative transportation, even planning bike-only lanes down the middle of Pennsylvania Avenue with bike-only traffic signals that activate before car signals. Change only requires a commitment and effort.

If a particular solution required expansion of a right-of-way, however, that could prove more difficult. Such a solution might be required to substantially improve bicycle access on Ethan Allen Avenue. Most solutions, however, do not require such a change.

Many solutions do, however, require working with other jurisdictions. The City has had low success in the past. A redoubling of City effort would be required to push other jurisdictions to assist with solutions. These efforts could be simplified with a concerted effort involving the City's lobbyist, State Senator Raskin, and U.S. Representative Van Hollen. With a concerted effort, each of these solutions is eminently doable, ranking the feasibility at a medium rating.

*FIT WITH OTHER APPLICABLE PLANS (CITY, COUNTY, STATE, REGION)*

Montgomery County has a Pedestrian and Traffic Safety Advisory Committee and maintains a web page on pedestrian improvements. The Montgomery County Department of Transportation also maintains a website discussing bicycle improvements. County pedestrian efforts include bus stop improvements, cross walk enforcement, and unspecified engineering improvements.

Additionally, the Metropolitan Washington Council of Governments produced, in 2006, its Bicycle and Pedestrian Plan for the National Capital Region. This report urges area governments to “develop . . . high visibility bicycle or pedestrian project[s] to demonstrate the effectiveness of bicycling and walking as a short distance transportation mode.”

The State of Maryland passed the Bicycle and Pedestrian Access Act of 2001, mandating the development of a twenty-year bicycle and pedestrian master plan to systematically direct resources to bicycle and pedestrian projects using both new and existing programs. This plan “encourages local officials to update and prioritize areas of greatest need” to help the State prioritize funding.

In fact, the only area government without an aggressive plan to improve bicycling and pedestrian travel is Takoma Park. Each recommendation in the TFEA report meshes very well with each of these County, regional, and State plans.

#### *NEGATIVE SECONDARY IMPACTS*

As mentioned, creation of new sidewalks and bike paths will have the secondary negative impact of potentially increasing stormwater runoff. These secondary impacts can be eliminated or controlled through one or more of the following approaches:

- (15) build sidewalks and/or bike lanes in existing paved roadways. This solution eliminates creation of new impervious surfaces;
- (16) ensure that any constructed sidewalks are separated from streets by at least three feet to minimize runoff from new sidewalks and incorporate rain gardens or trees/vegetation in that three-foot space between new sidewalks and roads;
- (17) capture stormwater in detention or retention ponds and infiltrate, evaporate, or release in a controlled manner.

#### *QUESTIONS THAT REMAIN TO BE INVESTIGATED BY CITY*

The City needs to accomplish two primary additional tasks. First, the City must prioritize areas where bicycle paths and sidewalks are most necessary. This effort will require some study. Second, the City should investigate funding sources to minimize the draw on the City's budget.

#### *LIST OF REFERENCES*

Highway Safety Improvement Program, League of American Bicyclists, [http://www.bikeleague.org/resources/reports/pdfs/highway\\_safety\\_improvement\\_program.pdf](http://www.bikeleague.org/resources/reports/pdfs/highway_safety_improvement_program.pdf).

Dangerous by Design, Surface Transportation Policy Partnership, <http://www.transact.org/PDFs/2009-11-09-Dangerous%20by%20Design.pdf>.

Highway Safety Improvement Program, League of American Bicyclists, [http://www.bikeleague.org/resources/reports/pdfs/highway\\_safety\\_improvement\\_program.pdf](http://www.bikeleague.org/resources/reports/pdfs/highway_safety_improvement_program.pdf).

International Dark Sky Association, <http://www.darksky.org/mc/page.do?sitePagelD=56422&orgId=idsa>

Idaho State Code, Title 49

Montgomery County Maryland Website:

<http://www.montgomerycountymd.gov/pedtmpl.asp?url=/content/dot/DES/pedbike/works.asp>

<http://www.montgomerycountymd.gov/dirtmpl.asp?url=/content/DOT/Dir/pedsafety/actions.asp>

Metropolitan Washington Council of Governments, Bicycle and Pedestrian Plan for the National Capital Region, July 2006, <http://www.mwcog.org/uploads/committee-documents/v1ZfWl020070726155118.pdf>

Maryland Department of Transportation, Twenty Year Bicycle and Pedestrian Access Master Plan, October 2002, <http://www.mdot.maryland.gov/Planning/Bicycle/FINALB.PDF>

(r)

# WASTE

Americans generate copious amounts of waste each day. According to the United States Environmental Protection Agency, "in 2006, U.S. residents, businesses, and institutions produced more than 251 million tons of municipal solid waste, which is approximately 4.6 pounds of waste per person per day." <http://www.epa.gov/epawaste/nonhaz/index.htm>.

That's a lot of trash. And while Takoma may have good recycling rates for the East Coast, there's room for waste reduction and recycling increases.

In that spirit, the TFEA makes the following recommendations.

## Rewards for Recycling

Reward waste reduction with a "rewards for recycling" program. Change the trash and recycling program to implement a charge for garbage disposal while providing an extensive free recycling program, including recycling of all organic waste. Program would include city-distributed garbage cans on wheels of different sizes. Smallest size container would be the lowest fee (possibly free). Larger-sized containers would incur progressively larger fees. Recycling and organic waste containers would be different sizes as well, but all recycling containers would be provided and picked up at no charge regardless of size. Similar program is in place in Tacoma, Washington and works well. Fees collected on garbage disposal would be used to offset costs of recycling program and waste collection in general.

### BACKGROUND

Currently Takoma Park residents can throw away as much trash as they want at no charge. There is no incentive to minimize waste generation, and no incentive other than a moral one to recycle. It's essential that residents who recycle most of their waste and throw only small amounts into the trash be rewarded. Implementing a simple volume-based system is the easiest way to incentivize recycling, minimize waste, and raise money for the Takoma Park waste management program.

The program would work as follows:

When a resident moves into the City, they contact the City to request trash, mixed recycling, and organic waste containers, much as they already do when requesting a new recycling bin. They are offered one of three sizes of

trash containers and one of two sizes of recycling and organic waste containers. (see photos).



A fee is pre-established for each size trash container.

The resident is charged according to that pre-established fee schedule. There is no difficult volume calculations by the pick-up staff as the resident is assessed a fee based upon the size of container she or he chooses. Tacoma, Washington's fee schedule is as follows: (1) 20-gallon container: \$25.25; (2) 30-gallon container: \$35.35; (3) 60-gallon container: \$57.00; or (4) 90-gallon container: \$79.35



The resident can call the city and downsize or upsize their garbage can at any time, thus reducing or increasing the fee they are charged. Reducing waste generation reduces the charge to residents, thus encouraging recycling.

For larger items not suitable for the trash can, the City would implement a "call-to-haul" program where City residents would be allowed a twice-per-year pickup of larger items that do not fit into the cans. This service would be provided free to discourage residents from illegally dumping items like mattresses, appliances, and other large items.

### ENVIRONMENTAL BENEFIT

Environmental benefits of waste reduction are enormous. Less waste into dumps reduces the need to allocate land for landfills. Fewer landfills, in turn, reduces water and air pollution. Less waste reduces the use of garbage-burning plants, thus reducing air pollution for hazardous substances like dioxins and metals.

Reducing waste will increase recycling rates. This reduces demand for raw materials, reducing demands on mining, timber cutting, petroleum extraction, refining, and smelting as well as the myriad environmental problems associated with each of these material extraction and processing procedures.

*SECONDARY BENEFITS*

Such as system will encourage people to reduce waste generation. This will likely have a small reduction in the amount of materials collected by Takoma Park, possibly reducing the number of waste trips needed by large trucks, and potentially reducing Takoma Park's greenhouse gas emissions slightly.

Programs like this can also have a secondary educational effect, which can eventually encourage manufacturers to reduce product packaging and waste. See Amazon's "Hassle-free Packaging" as an example.

**Recycle Organic Household Waste**

Begin collection and composting of all organic household waste not composted at the residence and study/research the sale of said compost utilizing a public/private partnership as a revenue raising mechanism for the City

Currently the City only collects yard waste. Organic waste from households that have an inability to compost is ground up in sink-based garbage disposals or thrown into the trash.



According to the Schumacher Centre for Technology and Development, household organic waste composes 60% of all municipal waste headed to landfills or incinerators. Composting this waste would reduce Takoma Park's garbage contribution enormously.

Reducing the waste sent to the Dickerson incinerator reduces costs to the City and pollution. Additionally, that organic matter, once properly composted, can be sold for garden and farm amendments, offsetting the overall cost of the waste collection program.

| Recommendation                                                                                                                                                                                           | Type of Benefit <sup>1</sup> | Degree of Impact <sup>2</sup> | Geographic Impact <sup>3</sup> | Costs (City/Others) <sup>2</sup> | Feasibility <sup>2</sup> | Fit with Other Applicable Plans <sup>4</sup> | Timeframe <sup>5</sup>               |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|-------------------------------|--------------------------------|----------------------------------|--------------------------|----------------------------------------------|--------------------------------------|
| <b>Create and distribute magnets identifying recyclables</b>                                                                                                                                             | Wst, Public Education (PE)   | Med                           | City                           | Low (city)                       | High                     | ?                                            | Implement: short<br>Complete: short  |
| <b>Pursue a public-private partnership for household organic waste collection</b>                                                                                                                        | Wst                          | High                          | City                           | High?                            | Med                      | ?                                            | Implement: short<br>Complete: medium |
| <b>Implement a fee for waste disposal</b> called "rewards for recycling" based upon amount of waste disposed. Implementation simplified through distribution of various sizes of standardized waste cans | Wst                          | Med                           | Ward, City, County             | Med / Low                        | High                     | ?                                            | Implement: short<br>Complete: short  |
| <b>Polystyrene Ban</b> – no City funds used to purchase polystyrene containers                                                                                                                           | Wst                          | Low                           | City                           | Low                              | High                     | ?                                            | Implement: short<br>Complete: short  |

- (1) Environmental media area impacted by recommendation: Air = Air; Bld = buildings; GHG = greenhouse gas mitigation; Hab = habitat; NRG = energy; Public Health Benefit = PH; Resilience for the community = Res; Social Benefit = Soc; Strm = stormwater; Trns = transportation; Wst = waste; and All = effects on all environmental media areas.
- (2) Graded relative to other recommendations.
- (3) Geographic impacts can include Ward; City; County; Regional; National; and Global.
- (4) Degree of alignment or fit with other County, State or Regional goals/targets/activities.
- (5) Short (0-2 years), Medium (2-5 years), or Long-term (5+ years).

Once collection is begun, or before, the City should carefully study a public/private partnership to establish the commercial sale of Takoma Park's composted organics.

**Refrigerator Magnets**

Finally, in order to raise awareness of the City's waste reduction efforts, we recommend creation of refrigerator magnets that inform residents about what they can recycle and where they can go for more information.

This is a cheap, easy, and effective solution to increase visibility of Takoma Park's Program.

**Polystyrene Ban**

The City should pass an ordinance or take other appropriate action that bans the use of City funds to purchase polystyrene food service items. The City should also actively support the use of alternatives to polystyrene.

# end notes



- (1) City of Takoma Park, Maryland, Strategic Plan: FY 2010—FY 2015 (May 18, 2009).
- (2) “Resolution Establishing a Task Force on Environmental Action,” City of Takoma Park Resolution 2009-51 (July 27, 2009).
- (3) “Resolution Appointing Members to the Task Force on Environmental Action,” City of Takoma Park Resolution 2009-56 (Sept. 21, 2009) (appointing seventeen members to the TFEA); “Resolution Appointing Members to the Task Force on Environmental Action,” City of Takoma Park Resolution 2009-60 (Oct. 5, 2009) (appointing two additional members to the TFEA). Two members of the TFEA withdrew during the process, leaving seventeen active members.
- (4) “Resolution Establishing a Task Force on Environmental Action,” City of Takoma Park Resolution 2009-51 (July 27, 2009).
- (5) City of Takoma Park website, <http://www.takomaparkmd.gov/hcd/historicpres.html>.
- (6) Id.
- (7) “Resolution Establishing a Task Force on Environmental Action,” City of Takoma Park Resolution 2009-51 (July 27, 2009).
- (8) Currently, EPA takes the average of the fourth-highest reading in each of the past three years. Those numbers for 2006, 2007, and 2008 were 84, 83 and 75 ppb respectively. Using EPA's current method for determining compliance, the average 8-hour ozone level at the school measured 80.7 ppb for 2008.

# appendix a:tfea members



Members listed alphabetically with the subject matter to which each member contributed:

Nadine Bloch (climate)

Leandra Carrasco (climate; transportation & waste)

Co-Chair Steve Davies – (air; stormwater; transportation & waste)

Co-Chair Joe Edgell – (buildings & energy; drafting; stormwater; transportation & waste)

Shari Friedman (transportation & waste)

David Hunter (climate; drafting; habitat)

Sat Jiwan Ikle-Khalsa (buildings & energy; climate)

Timothy Male (climate)

Elizabeth Marshall (climate)

Austin Meyermann (stormwater)

Terrill North (air; buildings & energy)

John Peterson (buildings & energy)

Emily Riddle (climate)

Scott Schang (climate)

Milford Sprecher (drafting; stormwater)

Catherine Tunis (buildings & energy; habitat; stormwater)

# appendix b:local action plan



## Status of Recommendations from the 2000 Takoma Park Local Action Plan

December 10, 2009

The following is the list of recommendations made in the February, 2000, Takoma Park Local Action Plan for Reducing Greenhouse Gas Emissions (LAP). Also included is the status of implementation of each of the recommendations as of February, 2010. As can be seen below, the City has made significant progress in some areas, for example relating to improved efficiency in its vehicle fleet, but that progress has been sporadic and reflects little sustained commitment to implementing the LAP over the past decade. Noteworthy is that we could find no effort prior to this TFEA report to measure how the City had performed against the recommendations in the LAP.

| Recommendation with Page #'s from LAP                                                                                              | Status of Implementation; if not implemented, why not                                                                                    |
|------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| <b>General Recommendations</b>                                                                                                     |                                                                                                                                          |
| G-1. Target of reducing GHG emissions 20% from 1990 levels by 2010 (p. 1-2)                                                        | No ongoing process for monitoring emissions against the baseline.                                                                        |
| G-2. Energy use and emissions information should continue to be gathered from utilities, preferably at the zip code+4 level (5-61) | Not done.                                                                                                                                |
| G-3. Build a system for tracking and verifying changes in energy use and consumption over time (5-61)                              | No ongoing process for monitoring emissions.                                                                                             |
| G-4. Creation of a municipal electric utility (xiii, pp 5-6 to 5-16)                                                               | Failed after considerable initial effort.                                                                                                |
| G-5. Hire Global climate change information coordinator to promote awareness (p5-33)                                               | Not done. Recommended again in 2008; not done due to budget issues.                                                                      |
| <b>Lighting Energy Use</b>                                                                                                         |                                                                                                                                          |
| L-1. Develop a master plan to define lighting energy goals (5-20)                                                                  | The city has been reviewing its lighting needs. Council has adopted use of induction lighting for all outdoor street light installations |
| Test                                                                                                                               |                                                                                                                                          |
| L-2. Explore energy efficiency standards or use of new technologies for reducing energy use while protecting nightscape (5-20)     | The City has explored lighting alternatives.                                                                                             |
| L-3. Work with PEPCo to re-invent programs for customers (5-20)                                                                    | Not done; PepCo is not easy to work with.                                                                                                |



|                                                                                                                                                                                     |                                                                                                                                |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| L-4. Develop planning and zoning language to include performance-based standards for selected outdoor lighting applications (5-21)                                                  | Not done. Council has adopted use of induction lighting for all outdoor street light installations                             |
| L-5. Develop education program to increasing awareness (5-21)                                                                                                                       | Not aware of any systematic programs for education.                                                                            |
| <b>Commercial/Residential Buildings</b>                                                                                                                                             |                                                                                                                                |
| CR-1. Organize owners for shared energy savings for apartments, commercial and institutional buildings(p. 5-30)                                                                     | City has sponsored a workshop regarding EnergyStar for businesses                                                              |
| CR-2. Place photovoltaics on Takoma Intermediate School (p.5-31)                                                                                                                    | A small system was deployed.                                                                                                   |
| CR-3. Aggregate residential and commercial power purchasers for negotiating green power rates (5-32)                                                                                | The city has not done this, but the County has a rebate program, with sporadic funding.                                        |
| CR-4. Expand existing Takoma Housing low income home improvement loan funds to cover energy efficiency upgrades (5-34)                                                              | Housing office has established a loan program for energy upgrades that is funded through CDBG.                                 |
| CR-5. Group purchasing plan for residents to lower costs of energy efficient technologies (5-35)                                                                                    | Not done.                                                                                                                      |
| CR-6. Hire Energy Technical coordinator (5-30, 5-36)                                                                                                                                | Not done.                                                                                                                      |
| CR-7. Issue city ordinance to require up to 1% of sales price of all residential and commercial buildings to be invested in energy or water efficiency at time of building transfer | Not done.                                                                                                                      |
| <b>Natural Resource Sector</b>                                                                                                                                                      |                                                                                                                                |
| NR-1. Educate about Tree Selection, Planting and Maintenance (5-40)                                                                                                                 | Significant education done through Arbor Days, outreach by arborists, city newsletter, and community listservs.                |
| NR-2. Prepare and distribute brochures on City's Tree Ordinance (5-40)                                                                                                              | Brochure has been prepared, Additional information is available on the website and through the newsletter                      |
| NR-3. Hold seminars on tree care and tree walks (5-40)                                                                                                                              | At least one seminar was held.                                                                                                 |
| NR-4. Prepare and distribute brochures on how to plant trees (5-40)                                                                                                                 | Information distributed during Arbor Day and additional information is available on the city website and on cable TV programs. |
| NR-5. Prepare articles, interviews, etc. on tree care (5-40)                                                                                                                        | Committee on Environment (COE) and Arborist have published a number of articles in Newsletter.                                 |
| NR-6. Sponsor a study on microclimate differences between parking lot and trees (5-42)                                                                                              | COE sponsored study completed in 1999.                                                                                         |
| NR-7. Plant trees in median strips of New Hampshire and University (5-43)                                                                                                           | Not done.                                                                                                                      |



|                                                                                                                                                        |                                                                                                           |
|--------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|
| NR-8. Build bioretention areas and plant trees to slow storm water (5-44)                                                                              | A few bioretention areas and several raingardens have been constructed or are in planning stages.         |
| NR-9. Work with county to have recommendation for bioretention areas in Takoma Park Master Plan (5-44)                                                 | Not done.                                                                                                 |
| NR-10. Prepare educational materials on constructing bioretention areas and distribute to each sector (5-44)                                           | Some materials were handed out by COE at Arbor day and other events.                                      |
| NR-11. Evaluate city properties for bioretention (5-44)                                                                                                | All properties that are subject to retrofits are evaluated for infiltration and retention.                |
| NR-12. Develop guidelines for new construction of streets and driveways to be of minimal surface area and be constructed of permeable materials (5-45) | Not done.                                                                                                 |
| NR-13. Prepare proposals for mandatory use of permeable surfaces in new construction of streets and driveways (5-45)                                   | Not done.                                                                                                 |
| NR-14. Work with appropriate government agencies to require use of permeable surfaces (5-45)                                                           | Not done.                                                                                                 |
| NR-15. Prepare guidance materials use of permeable surfaces in new construction of streets and driveways (5-45)                                        | Not done.                                                                                                 |
| NR-16. Conduct Outreach on use of permeable surfaces in new construction of streets and driveways (5-45)                                               | Not done.                                                                                                 |
| NR-17. Provide model large tree boxes for new street tree plantings (5-46)                                                                             | Tree boxes along Laurel Avenue and Carroll Avenue were enlarged for tree planting.                        |
| <b>Waste Measures</b>                                                                                                                                  |                                                                                                           |
| W-1. Pay-as-you-throw trash service (5-50)                                                                                                             | Not done.                                                                                                 |
| W-2. Adopt and enforce a local ordinance requiring all businesses to recycle (5-51)                                                                    | County law requiring recycling includes Takoma Park.                                                      |
| W-3. Expand Plastic Recycling Program (5-53)                                                                                                           | This has been done and potential expansions are evaluated as markets for recycled goods become available. |
| <b>Transportation</b>                                                                                                                                  |                                                                                                           |
| T-1. Replace 10 gasoline powered vehicles with 10 hybrids by 2010 (5-56)                                                                               | City has six hybrid vehicles in the fleet.                                                                |
| T-2. Propose a formalized commitment (policy) to purchase alternative technology vehicles (5-56)                                                       | Council and City Manager evaluate vehicle replacement in light of alternative fuel options.               |
| T-3. Monitor vehicle fleet to evaluate performance, energy savings, and CO2 reductions. (5-56)                                                         | Fuel use by all city vehicles is monitored.                                                               |



|                                                                                                                                 |                                                                                                                                                             |
|---------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| T-4. Implement a vehicle scrappage program using a monetary rebate to remove 10 old vehicles per year between 2001-2006 (5-57)  | City scraps city-owned vehicles; there is no program for private vehicles.                                                                                  |
| T-5. Promote ride-sharing, bicycling, walking and telecommuting (5-58)                                                          | Bicycle lane established on Maple Avenue.                                                                                                                   |
| T-6. Provide information on alternative commuting at municipal building, civic events, public meetings, office buildings (5-58) | Not done by city.                                                                                                                                           |
| T-7. Identify a city employee as the alternative commute contact person (5-58)                                                  | Not done.                                                                                                                                                   |
| T-8. Provide bus schedules and route maps at all bus shelters (5-59)                                                            | Maps are available at most bus stops.                                                                                                                       |
| T-9. Install bike racks including 25 racks given to city by M-DOT (5-60)                                                        | Bike racks have been installed in all commercial areas.                                                                                                     |
| T-10. Install or work with county and state to install sidewalks and bike lanes                                                 | New bike lanes on Piney Branch and on Maple Avenue. Plans for bike lanes in Takoma Langley Crossroads Plan. Sidewalk study done and plan has been prepared. |

# appendix c: issues considered but not included



## **Buildings**

As a result of limited volunteer time there were a number of things the building committee was not able to write up or explore fully. Some of the less developed recommendations and ideas are listed below with a little extra information.

### *Historic/Efficiency*

City could act as a mediator between historic preservation interests (authority currently resides at the county level, and Historic Takoma provides a strong advocacy voice) and standards, and the goals for achieving energy efficiency improvements in old housing stock. Some specific examples could include: loosening requirements for window replacements (or providing gap funding to pay for additional costs for historically accurate windows); providing extra incentives for historically sensitive energy retrofits; making owning a historic building more affordable, such that properties don't go into disrepair due to relatively higher costs of ownership and improvements; and working to help with the State backlog of historic preservation tax credit program – currently 4 month application review as of 2/10).

### *Home Energy Loan Program*

This is related to the Climate Change recommendation about city creating group purchasing programs for efficiency and renewable energy.

The county passed legislation in 2009 establishing the program. But it hasn't been funded yet (coming soon, regulations being developed April 2010). Could the city allocate funds to that program either as a matching program or just in lieu of county funding so it can go into effect? (The city should look at similarly taking stormwater funds and giving them to the county Rainscapes rebate program to allow city residents to be eligible – City residents currently aren't eligible since we don't pay into the county stormwater fees.)

### *Proposal on no/low growth, density trading*

Preserving a low density, leafy, happy, high quality of life place, avoiding the push for development -- slow steady, relentless building of more and more square feet of housing and shopping and commercial centers and pavement.



The City establishes a cap on square feet of confined building space in the City limits, with each parcel/owner of less than 2,000 sq feet (built space) allocated a 10% buffer, 2,000-10,000 sq feet (built space) allotted a 5% buffer for future construction or additions (i.e. if you have a 2,000 sq foot home you would have allowance within your cap to add another 100 sq feet). Each parcel/owner of more than 10,000 sq feet would also have a buffer but with a declining percentage of existing space.

The City establishes a rule whereby any future increase (or decrease) in the City-wide cap of square foot development would be allocated not to an individual site but allocated to property owners based on the square foot size of their property (not built space). This would prevent their from being a perverse reward for the largest homes and developments getting the largest share of any future allocation (were there one). The City also establish an amendment to the Charter that requires a public referendum on any increase/decrease in the building cap.

The City establish a market for the buying and selling of square foot buffers. So that someone wanting to build another 10,000 square feet of development at New Hampshire and University has to buy it from willing sellers at a market price.

*City to give financial incentive for higher density, more efficient living in our urban environment*

For achieving a threshold of square footage per occupant, owners get property tax break and occupants get income tax break/refund.

There's already a financial incentive to live more densely – (i.e. shared rent and utility bills in group housing, or family living in smaller than average house.) This would add to that.

Higher density in city could put some negative pressures on infrastructure/transportation/habitat.

If infrastructure is invested in, negative impacts could be mitigated, and then property values (and property tax revenue) will rise.

If more people live in city, income tax revenue and local shopping will rise.

Higher densities in cities is correlated with lower fertility rates. (a response to “feeling crowded”)

### **Climate Change**

The City shall prepare a Community Adaptation/Resilience Plan. The plan shall be based on an assessment of climate-related vulnerabilities, current capacities and potential resilience of local food, water and energy supplies, infrastructure and public health systems. It should include analysis of the costs and benefits of addressing major vulnerabilities identified in the assessment, set priorities for action, and assign responsibility to address prioritized actions. A small volunteer committee should be convened to assist the Sustainability Coordinator in developing the plan.

Most local climate and environmental action plans focus mainly on mitigation of greenhouse gas emissions and their environmental impacts. Few include adaptation responses largely because they must pursue a longer time



horizon and approach community planning through nontraditional methods. Adaptation plans start with emergency preparedness but should not end there. They should also consider community resilience in the areas of food, water and energy security and public health. The State of Maryland and the National Oceanic and Atmospheric Administration have conducted comprehensive vulnerability assessments that the City of Takoma Park could use as a starting point for assessing current capacity in these areas. The cost would be nominal and we would recommend assistance from an organization such as ICLEI to help develop the plan and guide the process. Such a plan would complement existing efforts and serve as a unifying framework for community planning.

### **Food/Meat**

UN Food and Agriculture Organization studies show agriculture accounts for more global GHG emissions than any other sector. Meat production is an energy-, land- and resource-intensive component of that large impact. Going vegetarian may seem hard personally, but from a systems standpoint, there aren't many barriers as compared to buying only local or organic food.

University of Chicago study (2006) shows that switching from average American meat-based diet to a vegan one is 50% more effective than switching to a hybrid car.

The city should consider efforts to reduce meat consumption for internal operations and city-wide, and increase local and sustainable agriculture in order to reduce those huge negative impacts.

NOTE: A vegan diet, provided enough calories, is proven to be safe, fully-nutritious and reduces many health ailments (high cholesterol). Animal-based proteins can be replaced with beans, whole grains and substitute, analog products to meet a variety of nutritional needs.

### **Population**

Several TFEA members supported including a recommendation to address population concerns in the final report. A specific recommendation was proposed to cap and equalize benefits of city employees, such that everyone would get the equivalent benefits of a 3-dependent household. Supporters of inclusion of a population-related recommendation focused on the global context of overtaxing the carrying capacity of the planet and food insecurity (which also disproportionately impacts people of color). Several TFEA members opposed the proposal based on issues of disparate impact on people of color and other legal and human rights issues. The issue of whether to somehow "address" population concerns continued in multiple TFEA meetings and on the TFEA listserv with no consensus being reached.

### **Transportation**

Replace speed bumps with more effective, more environmentally friendly, safer traffic-control options.

Plan and Implement the undergrounding of 410 through Takoma Park.

Encourage transportation agencies to eliminate diesel buses in T.P. in favor of cleaner alternatives.

Increase parking permit fee; use money to promote alternative transportation.

Allow non-directional parking on streets.

Establish and maintain a city-wide, online carpool system.

Support regional public transportation efforts, where and however feasible.

Support and advocate for the creation of the Purple Line.

Identify safety “hot spots” and ensure appropriate lighting and sidewalks in those areas to encourage pedestrian use.

Purchase locally-brewed bio-diesel for use in City vehicles.

Support bio-diesel brewing and sale in Takoma Park.

### **Water**

Fresh water is becoming a scarcer resource on this planet. Privatization and wars over it in critical areas of the world are contributing to suffering and instability. Additionally, the processing and transport of potable water and waste water taxes our aging infrastructure, and uses lots of money and energy. The city should consider efforts to encourage water conservation, efficiency and alternative systems such as grey water reuse.

### **Waste**

Complete a waste audit to identify items that most frequently enter the waste stream, but could be recycled in our current program.

Establish a volunteer “green team” to educate multi-residential landlords and superintendents on recycling procedures.

Distribute information about backyard composting and alternatives to raking leaves with leaf collection pamphlet.

Offer backyard compost-building and vermi-composting workshops.

Establish volunteer-maintained drop-off compost locations throughout the city for residents who cannot/do no compost.

Create public awareness of reuse options (Freecycle, e.g.).

Initiate a fee for leaf collection.



# appendix d:leed basics



## “What is LEED®?” – from USGBC.org website

The Leadership in Energy and Environmental Design (LEED) Green Building Rating System™ encourages and accelerates global adoption of sustainable green building and development practices through the creation and implementation of universally understood and accepted tools and performance criteria.

LEED is a third-party certification program and the nationally accepted benchmark for the design, construction and operation of high performance green buildings. LEED gives building owners and operators the tools they need to have an immediate and measurable impact on their buildings’ performance. LEED promotes a whole-building approach to sustainability by recognizing performance in five key areas of human and environmental health: sustainable site development, water savings, energy efficiency, materials selection and indoor environmental quality.

### *Who uses LEED?*

Architects, real estate professionals, facility managers, engineers, interior designers, landscape architects, construction managers, lenders and government officials all use LEED to help transform the built environment to sustainability. State and local governments across the country are adopting LEED for public-owned and public-funded buildings; there are LEED initiatives in federal agencies, including the Departments of Defense, Agriculture, Energy, and State; and LEED projects are in progress in 41 different countries, including Canada, Brazil, Mexico and India.

### *How is LEED Developed?*

LEED Rating Systems are developed through an open, consensus-based process led by LEED committees. Each volunteer committee is composed of a diverse group of practitioners and experts representing a cross-section of the building and construction industry. The key elements of USGBC's consensus process include a balanced and transparent committee structure, technical advisory groups that ensure scientific consistency and rigor, opportunities for stakeholder comment and review, member ballot of new rating systems, and a fair and open appeals process.”

# appendix e:leed ratings



LEED is a certification system that can be applied to any building type. The LEED rating system concentrates on many key categories to achieve a holistic approach to sustainability. In each category there are items that cannot be ignored in order to achieve betterment in other areas. Those categories and the items listed therein are given here, along with a very brief summary to what they pertain.

The following lists summarize the many aspects that are examined for a project. The first list focuses on the LEED system adapted to commercial, retail, and institutional projects; the second list targets rating high-performance and green homes.

## LEED SUMMARY FOR COMMERCIAL & RETAIL BUILDING PROJECTS

| Item                                                                | Detail                                                                            |
|---------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| <b>Sustainable Sites Category</b>                                   |                                                                                   |
| Construction Activity Pollution Prevention                          | Erosion and sediment control plan for construction                                |
| Environmental Site Assessment                                       | Assess environment contamination and remediation recommendations                  |
| Site Selection                                                      | Protects lands used for farming, parks, or other protected uses.                  |
| Development Density and Community Connectivity                      | Ensures proper building size and scope based on the location within the community |
| Brownfield Redevelopment                                            | Reuse previously developed land                                                   |
| Alternative Transportation—Public Transportation Access             | Integration with public transport and pedestrian access                           |
| Alternative Transportation—Bicycle Storage and Changing Rooms       | Provide means for bicycle use and promote alternate transportation                |
| Alternative Transportation—Low-Emitting and Fuel Efficient Vehicles | Preferred parking for low-emitting vehicles; alternative fuel stations            |
| Alternative Transportation—Parking Capacity                         | Parking not to exceed local zoning requirements                                   |
| Site Development—Protect or Restore Habitat                         | Site restoration and protection for vegetation                                    |
| Site Development—Maximize Open Space                                | Exceed local open space requirements by 25%                                       |
| Stormwater Design—Quantity Control                                  | Protects local storm water channels from excessive erosion                        |
| Stormwater Design—Quality Control                                   | Natural stormwater treatment and reduction of impervious cover                    |
| Heat Island Effect—Nonroof                                          | Shading or high reflectance of parking lots, sidewalks, roads                     |
| Heat Island Effect—Roof                                             | Shading, vegetation, or high reflectance of building roof areas                   |



|                                           |                                                                                     |
|-------------------------------------------|-------------------------------------------------------------------------------------|
| Light Pollution Reduction                 | Reduction of sky-glow, nighttime glare reduction, nocturnal environment enhancement |
| Tenant Design and Construction Guidelines | Education program for building tenants                                              |
| Joint Use of Facilities                   | Integrating school facilities as part of the community                              |

**Water Efficiency Category**

|                                    |                                                               |
|------------------------------------|---------------------------------------------------------------|
| Water Use Reduction                | Increase water efficiency                                     |
| Water Efficient Landscaping        | Limit or eliminate potable water use for landscape irrigation |
| Innovative Wastewater Technologies | Reduce potable water used for sewage conveyance               |
| Process Water Use Reduction        | 20% reduction for cooling for schools                         |

**Energy and Atmosphere Category**

|                                                      |                                                                       |
|------------------------------------------------------|-----------------------------------------------------------------------|
| Fundamental Commissioning of Building Energy Systems | Verify energy-related systems perform as they should                  |
| Minimum Energy Performance                           | Demonstrate a basic energy improvement (5% for existing, 10% for new) |
| Fundamental Refrigerant Management                   | Basic reduction of ozone depletion                                    |
| Optimize Energy Performance                          | Increase energy efficiency performance                                |
| On-site Renewable Energy                             | Encourage on-site renewable energy (1% minimum); solar, wind, etc.    |
| Enhanced Commissioning                               | Optimize energy-related systems                                       |
| Enhanced Refrigerant Management                      | Further reduction of ozone depleting and global warming refrigerants  |
| Measurement and Verification                         | Ongoing accountability of energy consumption                          |
| Green Power                                          | Purchase 35% of power from a green energy source                      |

**Materials and Resources Category**

|                                                          |                                                                    |
|----------------------------------------------------------|--------------------------------------------------------------------|
| Storage and Collection of Recyclables                    | Provisions for recycling programs                                  |
| Building Reuse—Maintain Existing Walls, Floors, and Roof | Conservation of existing facilities and resources                  |
| Construction Waste Management                            | Reuse construction materials and recycle construction waste        |
| Materials Reuse                                          | Reduce demand for virgin materials                                 |
| Recycled Content                                         | Increase use of recycled building materials                        |
| Regional Materials                                       | Materials and products from within 500 miles                       |
| Rapidly Renewable Materials                              | Use of materials from sources that can be replaced within 10 years |
| Certified Wood                                           | Follows the guidelines of the Forest Stewardship Council           |

**Indoor Environmental Quality Category**

|                                           |                                                       |
|-------------------------------------------|-------------------------------------------------------|
| Minimum Indoor Air Quality Performance    | Meet the minimum requirements of applicable standards |
| Environmental Tobacco Smoke (ETS) Control | Prohibit smoking except in designated areas           |



|                                                                     |                                                                                  |
|---------------------------------------------------------------------|----------------------------------------------------------------------------------|
| Minimum Acoustical Performance                                      | Provide classrooms with minimum noise reduction measures                         |
| Outdoor Air Delivery Monitoring                                     | Measure outside air quantity for occupant comfort                                |
| Increased Ventilation                                               | Exceed the minimum ventilation standards by 30%                                  |
| Construction Indoor Air Quality Management Plan During Construction | Reduce air contaminants during construction for workers and occupants            |
| Construction Indoor Air Quality Management Plan Before Occupancy    | Flush spaces with fresh air to remove new material off-gases                     |
| Low-Emitting Materials—Adhesives and Sealants                       | Reduce the amount of air contaminants from glues and sealants                    |
| Low-Emitting Materials—Paints and Coatings                          | Reduce the amount of air contaminants from paints                                |
| Low-Emitting Materials—Flooring Systems                             | Reduce the amount of air contaminants from carpets and floors                    |
| Low-Emitting Materials—Composite Wood and Agrifiber Products        | Reduce the amount of air contaminants from resins                                |
| Low-Emitting Materials—Furniture and Furnishings                    | Reduce the amount of air contaminants from classroom furniture                   |
| Low-Emitting Materials—Ceiling and Wall Systems                     | Reduce the amount of air contaminants from classroom walls and ceiling materials |
| Indoor Chemical and Pollutant Source Control                        | Proper exhaust and ventilation of interior spaces                                |
| Controllability of Systems—Lighting                                 | Give occupants control of lighting systems                                       |
| Controllability of Systems—Thermal Comfort                          | Give occupants control of temperature and humidity                               |
| Thermal Comfort—Design                                              | Target the design to meet standards for comfort and productivity                 |
| Thermal Comfort—Verification                                        | Verify whether the design targeted standards are met                             |
| Daylight and Views—Daylight                                         | Provide daylighting for 75% or more occupants                                    |
| Daylight and Views—Views                                            | Give a direct line of site to the outdoors for building occupants                |
| Enhanced Acoustical Performance                                     | Improved noise reduction in classrooms                                           |

| <b>Innovation In Design Category</b> |                                                                      |
|--------------------------------------|----------------------------------------------------------------------|
| Innovation in Design                 | Provides for innovative design elements not covered in items above   |
| Exemplary Performance                | Exceeds an above credit by twice the required                        |
| The School as a Teaching Tool        | Integrate a sustainable school with the school's educational mission |

| <b>Regional Priority Category specific to Takoma Park</b> |                                                                                   |
|-----------------------------------------------------------|-----------------------------------------------------------------------------------|
| Protect or Restore Habitat                                | Additional credit for site restoration and protection for vegetation              |
| Stormwater Design - Quantity Control                      | Additional credit for protecting local stormwater channels from excessive erosion |
| Innovative Wastewater Technologies                        | Additional credit for reducing potable water used for sewage conveyance           |

|                                                                |                                                                         |
|----------------------------------------------------------------|-------------------------------------------------------------------------|
| Optimize Energy Performance (40%)                              | Additional credit for obtaining 40% savings in energy performance       |
| On-site Renewable Energy (1%)                                  | Additional credit for obtaining 1% renewable energy                     |
| Building Reuse—Maintain Existing Walls, Floors, and Roof (75%) | Additional credit for conservation of existing facilities and resources |

The following list is a summary of the aspects considered in the LEED rating system for homes.

*LEED SUMMARY FOR HOMES*



| Item | Detail |
|------|--------|
|------|--------|

| Innovation and Design Process |                                                                                     |
|-------------------------------|-------------------------------------------------------------------------------------|
| Integrated Project Planning   | Preliminary project plans to incorporate green and efficient features and practices |
| Durability Management Process | Promotion of sustainability of materials and durability of the design               |
| Innovative or Regional Design | Incorporation of additional sustainable and efficient features not covered below    |

| Location and Linkages             |                                                                                |
|-----------------------------------|--------------------------------------------------------------------------------|
| LEED for Neighborhood Development | Minimize environmental impact                                                  |
| Site Selection                    | Preservation of parks and other environmental sites                            |
| Preferred Locations               | Building within existing communities                                           |
| Infrastructure                    | Building within areas with existing infrastructure: plumbing, electrical, etc. |
| Community Resources/Transit       | Encourage the use of public transit and alternate transportation               |
| Access to Open Space              | Encourage walkability and outdoor activity                                     |

| Sustainable Site          |                                                                           |
|---------------------------|---------------------------------------------------------------------------|
| Site Stewardship          | Minimize environmental damage to the site during construction             |
| Landscaping               | Avoid invasive species, chemical use, and minimize water demand           |
| Local Heat Island Effects | Shading or high reflectance of impervious materials                       |
| Nontoxic Pest Control     | Minimize the need for chemical control of insects, rodents or other pests |
| Compact Development       | Conserve land and enhance walkability                                     |

| Water Efficiency  |                                                                |
|-------------------|----------------------------------------------------------------|
| Water Reuse       | Use recycled water; capture and reuse storm water              |
| Irrigation System | Minimize water demand for irrigation                           |
| Indoor Water Use  | Reduce water demand by using water efficient plumbing fixtures |



| <b>Energy and Atmosphere</b>            |                                                                             |
|-----------------------------------------|-----------------------------------------------------------------------------|
| Optimize Energy Performance             | Meet or exceed the Energy Star requirements for homes                       |
| Insulation                              | Minimize heat loss/gain                                                     |
| Air Infiltration                        | Minimize uncontrolled air leakage                                           |
| Windows                                 | Maximize the energy performance of windows                                  |
| Heating and Cooling Distribution System | Minimize energy and efficiency losses in the HVAC system                    |
| Space Heating and Cooling Equipment     | Reduce energy consumption of HVAC equipment                                 |
| Water Heating                           | Improve domestic hot water system design and efficiency                     |
| Lighting                                | Minimize energy use of lighting fixtures                                    |
| Appliances                              | Reduce appliance energy consumption                                         |
| Renewable Energy                        | Encourage the use of electrical energy production; solar, wind, etc.        |
| Residential Refrigeration Management    | Select refrigerant to minimize ozone depletion and global warming potential |

| <b>Materials and Resources</b>      |                                   |
|-------------------------------------|-----------------------------------|
| Material Efficient Framing          | Optimize use of framing materials |
| Environmentally Preferable Products | Regional and renewable materials  |
| Waste Management                    | Reduce construction waste         |

| <b>Indoor Environmental Quality</b>       |                                                                    |
|-------------------------------------------|--------------------------------------------------------------------|
| Energy Star with Indoor Air Package       | Improve inside air with approved air quality measures              |
| Combustion Venting                        | Minimize leakage of combustion gases to interior spaces            |
| Moisture Control                          | Control indoor moisture to reduce risk of mold and provide comfort |
| Outdoor Air Ventilation                   | Reduce exposure to indoor pollutants                               |
| Local Exhaust                             | Provisions for pollutant control in kitchens and bathrooms         |
| Distribution of Space Heating and Cooling | Ensuring thermal comfort for each space                            |
| Air Filtering                             | Reduce particulates from the air stream                            |
| Contaminant Control                       | Reduce worker and occupant exposure to contaminants                |
| Radon Protection                          | Install detection to reduce exposure                               |
| Garage Pollutant Protection               | Reduce pollutant infiltration from garage sources                  |

| <b>Awareness and Education</b> |                                                                 |
|--------------------------------|-----------------------------------------------------------------|
| Education of Homeowner/ Tenant | Maintain efficient performance through educating the occupants  |
| Education of Building Manager  | Maintain efficient performance through educating the caretakers |

# appendix f: chevy chase rebate forms



Town of Chevy Chase  
4301 Willow Lane  
Chevy Chase, MD 20815

301-654-7144 (phone)  
301-718-9631 (fax)  
[townoffice@townofchevychase.org](mailto:townoffice@townofchevychase.org)

Town Request #:  
\_\_\_\_\_

## Energy Audit and Improvements Assistance Program

The undersigned, a current resident and homeowner in the Town of Chevy Chase, wishes to participate in the Town's Energy Audit and Improvements Assistance Program. By participating, I understand and agree to the following:

- The Program will reimburse a resident (a) the lesser of the cost of a home energy audit and \$200, and/or (b) the lesser of (i) the cost of implementing energy efficiency improvements recommended in the home energy audit and (ii) \$600 (less any reimbursement to the homeowner for a home energy audit). The reimbursement(s) to be made to any one household under this Program shall not exceed \$600. The costs associated with an audit and/or improvements initiated prior to October 14, 2009 are not eligible for reimbursement.
- The audit must be performed by a Building Performance Institute-certified building performance analyst.
- Improvements requiring a permit must be performed by a licensed Maryland Home Improvement Contractor. The individual or firm performing the improvements will certify on the bill for services that the work was stipulated by the home energy audit, a copy of which must be provided to the Town. The program will reimburse the cost of the materials and labor for the work of an independent contractor, whereas for work performed by a member of the resident's household, only out of pocket monetary expenditures will be reimbursed.
- Reimbursement for the audit and/or improvements is not available if duplicate payment for the same services has been received from any source (including a County or federal tax rebate or credit).
- A copy of the home energy audit and receipt must be provided to the Town.
- Data on home energy usage during the 12-month period following the energy efficiency upgrade work must be provided to the Town (personal information will be kept confidential).
- Request(s) for payment and receipts must be received by the Town before the close of business on June 30, 2010.
- The home energy audit must be completed by March 31, 2010. Please visit the Energy Star website for a list of auditors in Montgomery County:  
<http://www.mdhomeperformance.org/Counties/MontgomeryCounty.htm>

## AGREEMENT AND RELEASE

The undersigned hereby understands and agrees to all of the terms and conditions of the Town's Energy Audit and Improvements Assistance Program, as described above. The undersigned understands that, pursuant to the Town of Chevy Chase's "Homeowner Energy Audit and Improvements Assistance Program," the Town will partially or entirely reimburse a resident for having a Building Performance Institute-certified Building Performance Analyst perform a whole-house energy audit (up to \$200) and/or for implementing energy efficiency improvements

specified in the audit (up to \$600, less the amount, if any, paid to reimburse the resident for the audit). The cost(s) of an audit and/or improvements implemented prior to the effective start date of this program, October 14, 2009, are not eligible for reimbursement. In making the Town's program available to residents and paying for the auditor's and/or home improvement contractor's services, the undersigned further understands and agrees that the Town (a) does not guarantee or accept responsibility for any representations, advice or other information or opinions provided by the auditor or for the quality, scope or efficacy of work provided by the home improvement contractor, and (b) the Town does not guarantee the auditor's or home improvement contractor's work nor does the Town guarantee that the audit or the improvements will produce monetary savings.

In consideration for making the Homeowner Energy Audit and Improvements Assistance Program available and providing financial assistance thereunder, the undersigned hereby certifies and agrees that (a) I have read this document in its entirety, (b) I have and/or shall abide by all of the terms and agreements of the Program, (c) I understand and agree that the Town will not be responsible for the advice of the auditor or the work of the home improvement contractor, (d) I hereby release, indemnify and hold harmless the Town and all of its officers, employees, contractors, and agents from all suits, actions, damages, and costs which may result from the information or advice provided by the auditor, or the work provided by the home improvement contractor, to the undersigned or the undersigned's agents.

**I HAVE READ THIS DOCUMENT IN ITS ENTIRETY AND UNDERSTAND AND AGREE TO ITS TERMS.**

\_\_\_\_\_

Print Name

\_\_\_\_\_

Signature

\_\_\_\_\_

Email Address

\_\_\_\_\_

Date

\_\_\_\_\_

Address

Chevy Chase, Maryland 20815

\_\_\_\_\_

Phone

**OFFICE USE ONLY:**

*Reimbursement for Energy Audit:*

*Reimbursement for Improvements*

Amount reimbursed: \_\_\_\_\_

Amount reimbursed: \_\_\_\_\_



# appendix g:environmental history



Takoma Park has been a leader in advancing environmental issues. Among the City's early environmental efforts was the establishment of a recycling program in 1987. In 1992, City Council established a Committee on the Environment, made up of citizen volunteers, to advise the City Council on environmental matters. Most Committee members over the years were environmental professionals with different types of expertise. This allowed the Committee to work on a broad range of issues.

The Committee on the Environment led many efforts, including:

- Instituted and managed successful annual Arbor Day events starting in 1993, with 400 to 600 tree seedlings planted each year through "Adopt-A-Tree" program.
- Worked on design/installation of efficient lighting in Municipal Building and installation of an innovative new cooling system at Library, achieving 15-30% energy savings.
- Coordinated with City staff to rewrite and strengthen the City Tree Ordinance.
- Developed policy recommendations and public education to reduce air quality problems from garden equipment.
- Analyzed issues and made policy recommendations to Council on tree, watershed protection, open space, green building, and climate issues.
- Represented City environmental perspectives in various efforts, including developing the Takoma Park Master Plan of 1990, City Open Space Plan, and West Nile Virus Plan. Led effort to acquire several wooded properties for open space, including Glengary lots, lots near Jackson and Garland Avenues, and Sligo and Poplar Mills properties, to preserve habitat, watershed and climate change values by working with City, County, and State officials and citizen groups.
- Designed and implemented microclimate analysis to compare weather conditions in typical treed yard with those in a nearby parking lot in 1999. This study was featured on Newsnight Maryland, Maryland Public Television.
- Developed numerous educational/outreach materials, Newsletter articles, compliance assistance for local businesses, and several public workshops on natural resource and energy issues.



- Developed Sustainable Building Guidelines in 1999 to encourage appropriate siting, design, materials and equipment use, and landscaping during building and renovations. Updated guidelines in 2001 and made specific recommendations for greening the construction of the new Community Center.
- Developed Climate Change Action Plan, one of the Nation's first, and successful grant proposal to develop the Plan, with a goal to reduce CO2 emissions to 80% of 1990 levels; implementing several strategies.
- Developed successful grant application to fund solar hot water panels.
- Developed and presented Rain barrel and energy seminars at City Green Building Day in 2007.
- Organized several "make and take" rain barrel workshops for citizens.
- Wrote draft legislation and led successful effort to have Maryland General Assembly adopt a state program to require removal of toxic mercury switches from end-of-life vehicles.

The City Public Works Department has used biodiesel in City trucks for over 10 years and is now using 100% wind power through renewable energy credits for all City facilities. The City upgraded lighting systems in its facilities to T-8 fluorescents, added direct digital control systems in the Community Center and Library, and upgraded air conditioning equipment in the Community Center in the 1990s. New windows and a tracking solar day lighting system were installed at the Public Works facility. Variable frequency drives have been added to all large motors over five horse power. These improvements reduced energy use by 30%. New projects underway include a green roof project, an energy efficiency performance contract for the Community Center, installation of a small amount of solar PV at the Community Center, and construction of a new energy-efficient Public Works facility that will incorporate LEED standards.

The City Department of Housing and Community Development, together with Public Works, hosted a very successful "Green Building Day in February, 2007 with seminars and exhibits on various topics that attracted hundreds of attendees.

Citizens of Takoma Park are very environmentally aware and active. In addition to taking actions to lighten their personal environmental footprints, they advocate for local regional, and national environmental values. There have been some notable local environmental achievements outside of those led by the City or City volunteers. Takoma Park resident Barbara Beeler established and ran Green Goods, a retail store dedicated to helping people live a greener lifestyle. Resident Mike Tidwell held monthly open houses at his home to show people his low impact lifestyle. Tidwell also founded Chesapeake Climate Action Network, a regional climate advocacy group. Tidwell and others founded a corn stove cooperative, convincing the City to allow a silo for storing fuel for corn stoves on Public Works property. Sally Gagne revived the local watershed advocacy group, Friends of Sligo Creek, which has grown in reach and influence under the leadership of Takoma Park residents Ann Hoffnar, Bruce Sidwell, and Clair Garman. Takoma Park resident Bill Hutchens formed a green building listserve, where residents and professionals can share information on various aspects of green buildings.