

**Fairfax County Staff Perspectives on Recommendations in the March 15, 2013 Report
from the MITRE Corporation Entitled “Building Energy Technology Recommendations to
Fairfax County,”
June 18, 2014**

Recommendations are copied/excerpted from the MITRE report as noted. Please note that many of the citations are excerpts and not the complete text provided by MITRE. The reader is advised to consult the MITRE report for more complete discussions.

MITRE Recommendation 1: Building Technologies

[From Section 3.3.1.2 of the MITRE report]

To the extent that this document is to help FCG [Fairfax County government] encourage proffers for particular designs or technologies, this section should show that much of what determines a building’s energy consumption is simply beyond FCG’s direct influence. To constructively specify energy-efficient building form, FCG would have to be intimately involved in design, construction, and operations. FCG does not have the manpower to do that for every project even in just Tysons Corner, and this alone is reason enough to jettison the idea of doing so. We, therefore, recommend that FCG take no action directly on building form, integration, construction, or operations.

Instead, in Section 5, we propose that FCG attack the issue indirectly. It can (and we heartily argue that it should) affect energy consumption for every building in the region by specifying overall energy performance standards and encouraging public reporting of consumption.

[From Section 3.3.3.2 of the MITRE report]

For FCG, as we did with the discussion of building form, we strongly recommend that FCG continue its practice of not prescribing technologies or designs to developers. A building is a complicated system. Such prescription addresses only part of the energy efficiency, does so usually to negative cost and environmental effects, and places a huge burden on FCG itself. . . .

[From Section 6.1 of the MITRE report]

We strongly recommend the FCG continue its practice of not employing a prescriptive approach to building technologies or components. This holds for both for technologies included at initial construction and for technologies for which a developer might provision in anticipation of future installation. This is because a building is a system. Its energy consumption is function of its design, its construction, its relation to its surroundings, and its operations. The prescriptive specification of technology ignores primary energy efficiency drivers and imposes a huge administrative, technical, and personnel burden on FCG itself. These are recognized difficulties, and indeed, they are why design certification and performance standards were originally created. . . .

Staff Perspective

Staff appreciates MITRE's guidance regarding the need to avoid establishing technology prescriptions for development proposals and views the existing (and proposed) green building policy as being consistent with this view. However, we do support engagement of zoning applicants in discussions regarding specific technologies that they may have interest in and do not support discouragement of proffered commitments to particular energy technologies should an applicant express such interest.

With respect to specific green certifications and tracking and reporting of energy consumption, please see the staff perspectives on MITRE's recommendations 4 (a through d) and 5.

MITRE Recommendation 2a: Individual Technologies/Data Collection--Wind

[From Section 3.1.1.2 of the MITRE report]

Wind generation requires fairly constant and strong prevailing winds (utility-scale generation currently requires annual average wind speed greater than 6.5 meters per second (DOE, 2013)). This holds true for both traditional external turbine systems as well as those inside buildings. In the former case, the blades are placed directly into the prevailing wind. In the latter (think of China's Pearl River Tower), prevailing wind is channeled (increasing speed, decreasing volume, and taking friction losses) into the building where smaller turbines are spun to generate electricity. In both cases, the prevailing winds must have enough kinetic energy to make harvesting it worthwhile.

The Virginia NREL map shows that Tysons Corner (and most of Virginia generally) simply does not have the wind potential to make wind generation practical. Relative to rest of Virginia, Fairfax has regions of relatively strong winds, but even here, we are at least 15% under the practical threshold. We recommend that FCG not encourage installations unless a developer has himself proposed the project.

If, however, FCG wishes to explore the option further, it could use the proffer process to map the prevailing wind fields over Tysons Corner. High-quality logging anemometer systems can be purchased and installed for a few thousand dollars. Aesthetically, they are unobtrusive, and they require little training to generate useful, long-term data sets.

Staff Perspective

Staff has looked into the feasibility of implementing wind-generated energy systems in the county and based on the findings agrees with MITRE's conclusion that the Northern Virginia area would be on average below the minimum rules of thumb for installation of residential or commercial wind energy systems. Staff also supports MITRE's recommendation that staff not encourage installation of wind energy technology as part of the zoning process unless a

developer proposes the project in which case the developer would likely conduct a site-specific analysis to assess the costs and benefits of the proposal. It is staff's view that it would not be a good use of resources to map the prevailing wind fields over Tysons Corner.

MITRE Recommendation 2b: Individual Technologies/Data Collection--Geothermal

[From Section 3.1.2.2 of the MITRE report]

The envisioned density and heights of development in Tysons Corner will dictate that any geothermal installation uses vertical loops and that the loops will be under the buildings themselves. The primary expenses of vertical systems are found the boring and planting of the piping, not the above-ground components. This precludes retrofit, and so FCG's only concern with GSHP is installation during initial construction. There are no provisions for later installation of such systems.

Instead, FCG should concern itself with new installations. The problem is that an engineering study is necessary to determine the general suitability of the GSHPs in Tysons Corner. We are aware of no such general study, and so we recommend against FCG encouraging the installation of GSHP if the developer does not support the idea.

If FCG wishes to pursue this avenue for the future, however, a comprehensive engineering study of the issue may be of interest. We cannot provide a cost estimate for such an effort, however. Indeed, we expect that it is cost prohibitive for a single developer on a single project. Instead, it may be feasible to encourage developers to augment DPWES and DMME databases if a general engineering study cannot be completed from their existing stores.

Staff Perspective

Ground source heat pump systems are a proven technology and would be evaluated by the developer on a case-by-case basis for his or her project. There are a wide variety of soils in the county and a soils map is available on the county website. Many systems have been installed in the county. The county would not be involved in the internal evaluation process.

MITRE Recommendation 2c: Individual Technologies/Data Collection--Solar

[From Section 3.1.3.2 of the MITRE report]

Specific to the case of individual buildings in Tysons Corner, however, the application of solar devices is likely limited. Photovoltaic generation and active systems are best employed where the roof surface area is large relative to the building's floor area. That is not the case in Tysons Corner where urban density and vertical development will be the rule.

Passive systems are generally functions of design, rather than technology implementations, so while insolation management will be a core concern for energy efficiency design, FCG will likely find it difficult, at best, to negotiate proffers on the subject.

As with wind and GSHP, we recommend that FCG encourage the adoption of solar systems only if the developer originally proposes and supports the installation.

We do not, however, follow the same path on the subject of data collection. Insolation is well-known and easily available from NREL (NREL, 2010); there is nothing to be gained from a proffer of data collection on this subject.

Staff Perspective

Staff supports MITRE's perspectives on photovoltaic generation. It should be noted that in 2008, staff was directed by the Board of Supervisors to look into the feasibility of implementing solar photovoltaic generation on county property (roof top as well as ground mount). Staff followed up this initial study in 2011 to address a budget related question during the FY 2012 budget process.

Based on careful review, which included state regulatory requirements, legal considerations, legislative authority as well as costs and incentives, staff concluded photovoltaic generation is a relatively expensive way to generate electricity or reduce greenhouse gas emissions. For example, the 3 kW photovoltaic demonstration project installed on the roof at the Thomas Jefferson High School for Science and Technology cost \$56,000 even with discounted pricing from the installer. This project was the work of a student club and funded with private contributions. While the system is an excellent teaching tool, it only generates approximately one thousandth of the power consumed at this high school.

Solarbuzz.com tracks the current market prices for solar systems. The March 2012 index for large flat roof commercial systems in a sunny climate is 19.41 cents per kWh. This can be compared to our current grid electricity rate of 10 cents per kWh, or just under twice as expensive per kWh. The equivalent residential index is 28.91 cents per kWh. This can be compared to our current grid electricity rate of 12 cents per kWh. It should be noted that these costs do not take into consideration net metering or standby charges.

MITRE Recommendation 2d: Individual Technologies/Data Collection—Storage for Load Shifting

[From Section 3.2.3 of the MITRE report]

We recommend that Fairfax remain neutral on the implementation of load-shifting in an individual building. Environmentally, a net increase in energy consumption is specifically counter to FCG’s carbon-neutrality objective, and the implications on the form of the grid in Tysons Corner are murky. Economically, we foresee the benefit of storage for load shifting as diminishing over time. The result here is like that for generation technologies: we recommend that FCG only pursue energy storage systems only if they are originally proposed and supported by the developer.

Staff Perspective

Load-shifting allows building owners or operators to shift loads from high-cost peak periods to low-cost off-peak periods to achieve benefits including cost savings. MITRE’s discussion focuses primarily on one load-shifting technology and application: thermal storage for cooling. The report acknowledges that the financial case for thermal storage “is highly specific to a particular site and implementation” and raises numerous issues including electricity price trends and equipment efficiency that contribute to the difficulty of drawing firm conclusions regarding benefits.

Section 3.2.2 of the report questions the environmental benefits of load shifting and concludes that “it *seems wisest to assume* that load shifting is an environmental minus.” (Emphasis added.) This conclusion is not premised on a review of the literature but appears based primarily on speculation (e.g., “it *seems reasonable to guess* the load shifting increases overall consumption” (emphasis added)). To the extent MITRE is simply suggesting that the environmental benefits of each proposal be evaluated on its own merits, staff concurs. Staff does not agree that load-shifting should be presumed to have net negative environmental consequences, however. Load-shifting has demonstrated benefits in appropriate circumstances. In fact, ice thermal storage and its benefits were the subject of a September 8, 2011 presentation before the Planning Commission (<http://www.fairfaxcounty.gov/planning/minutes/minutes090811.pdf>, see page 9).

Staff supports the MITRE recommendation stated in Section 3.2.3 that the county should remain neutral on the implementation of load-shifting technology in an individual building, but address it when proposed and supported by a developer. The Comprehensive Plan green building policy provides room to consider the implementation of load-shifting technologies should the idea be proposed by an applicant during the zoning process.

MITRE Recommendation 3: District Energy

[From Section 3.4.2 of the MITRE report]

... The combination of these two recommendations [Metropolitan Washington Council of Governments and Northern Virginia Regional Commission] simplifies FCG's available decisions relative to proffers concerning district energy. The sure determination of economic feasibility requires a detailed engineering, financial, and legal analysis. The form of the plant, its power output, its heat output, its fuel, its location, its profit distribution, its environmental constraints, its financing terms, its potential customers, market energy costs, zoning restrictions, legal authorities, and state regulation all must be analyzed specifically for the particular application.

We therefore recommend that, in light of such significant uncertainty, unless an applicant is proactively pursuing a district energy approach (or similar effort), the county not seek proffers on the subject of district energy in favor of seeking proffers with more certain benefit. Doing otherwise incurs a certain opportunity cost for an unquantifiably uncertain gain of uncertain magnitude.

If FCG wishes to proceed towards district energy, we recommend that it first seek help from federal resources to identify appropriate private sector partners and to identify most relevant case studies for comparison. EPA's Combined Heat and Power Partnership (EPA, 2012) and DOE's Mid-Atlantic Clean Energy Application Center (DOE, 2012) are good starting points.

Staff Perspective

The MITRE report notes that "District energy... may offer the biggest source of energy and environmental gains in Fairfax, and is a tantalizing target as a result." However, this statement is based on a comparison to large-scale coal fired base load plants, which are no longer a commercially available technology comparative source for generating electricity. Virtually all new generation facilities in Virginia are now natural gas-fired, are highly efficient (upwards of 50%), and exhibit very low emissions.

The MITRE study assumes that district energy benefits are attributable to the utilization of waste heat, presumably generated from industrial sources. The Tysons area economy is primarily based on the commercial and office building markets, and there are no industrial production facilities in the area to be able to capture high grade waste heat. A district energy system in Tysons would likely therefore have to utilize conventional fuel sources as its process fuel, thus minimizing the chance for efficiency gains.

Staff agrees with the MITRE report that the District Energy systems encompass “a certain opportunity cost for an unquantifiable uncertain gain of uncertain magnitude,” and that Fairfax County “should not seek proffers on the subject of District Energy in favor of seeking proffers with more certain benefits.”

**MITRE Recommendation 4a: Third-Party Certifications and Performance Guidelines--
LEED**

[From Section 5.4 of the MITRE report]

FCG already pursues certification-based approach with its use of LEED. We recommend that it continue this course, rather than looking for more direct influence over the technology particulars of a building. Building code already specifies energy efficient installation standards; FCG does not need an additional layer of prescriptive specifications. We recommend continued use of LEED. Even if it does not guarantee energy efficiency, as a general environmental stewardship tool, it offers wider benefit.

Staff Perspective

Staff appreciates MITRE’s guidance regarding the need to avoid establishing technology prescriptions for development proposals and its support for LEED®. We view the existing (and proposed) green building policy as being consistent with this view, although the policy incorporates (and is proposed to continue to incorporate) flexibility to provide for the consideration of other established green building rating systems. The policy also provides broad support for a range of energy conservation, water conservation and other green building practices. As noted earlier, staff would also support engagement of zoning applicants in discussions regarding specific technologies that they may have interest in and in acceptance of proffered commitments to particular energy technologies should applicants have such interest.

**MITRE Recommendation 4b: Third-Party Certifications and Performance Guidelines—
Designed to Earn the ENERGY STAR®**

[From Section 5.4 of the MITRE report]

To complement LEED, we recommend that the county encourage Designed to Earn the ENERGY STAR certification . . . ENERGY STAR augments existing prescriptive building codes (VA 2009) by requiring building owners to report and compare actual energy use. We recommend DEES certification, rather than ENERGY STAR certification for two reasons. First, a new development may not neatly align with the ENERGY STAR categories. A campus-style multi-building design, for example, is not applicable, though may offer lower overall energy consumption. Most new development will fit into DEES, but all cases will not, and FCG should therefore be judicious in its encouragement of DEES. Second, because the ENERGY STAR cannot be awarded until after a year of operations, certification cannot be guaranteed from design itself. If the proffer is for ENERGY STAR certification, but the building operator fails to achieve the label, we assume that FCG has little recourse, absent incorporation of an enforcement mechanism into the proffer.

The intent is to improve the efficiencies of the individual buildings, pave the way towards net-zero measurement, grow the ENERGY STAR databases, and improve the LEED rating systems themselves. In the former two cases, the benefits accrue to the building owner. He is hopefully able to use the benchmarking to reduce energy costs, and use of Portfolio Manager helps to pave the way to net-zero measurement as it becomes available. In the latter two cases, the practice means that Tysons Corner development helps to improve the state of the art and, therefore, has a longer and further reaching effect greater than just the new development itself.

[From Section 6.4 of the MITRE report]

. . . because LEED only considers design, FCG should also encourage at least Design to Earn ENERGY STAR certification . . .

Staff Perspective

The Designed to Earn the ENERGY STAR® designation can be pursued for residential projects as well as for those nonresidential projects that are eligible for the ENERGY STAR® designation.

For residential projects, the Designed to Earn the ENERGY STAR certification process involves a review by a certified Home Energy Rater of construction plans to ensure that they include the energy efficiency features and construction details necessary for attainment of the ENERGY STAR designation. Additional testing and inspections are needed for the home to earn the ENERGY STAR designation.

For certain nonresidential buildings, the ENERGY STAR score is a number between 1 and 100 that compares the energy use of a building against similar buildings. The higher the score, the higher the energy performance—a score of 30, for example, indicates that the building is performing better than 30 percent of like buildings nationwide, while a score of 90 indicates that the building is performing better than 90 percent of like buildings. A score of 75 is needed to qualify for ENERGY STAR certification. While the ENERGY STAR Portfolio Manager tool is available for tracking energy use of all buildings, ENERGY STAR scores are only available for specific types of commercial buildings and industrial plants. As ENERGY STAR certification relies on actual building energy use, the ENERGY STAR score and certification process are available only for existing buildings. The Designed to Earn the ENERGY STAR program is, however, available for buildings that are being designed (for the same types of buildings eligible for the ENERGY STAR score).

To pursue the Designed to Earn the ENERGY STAR designation for non-residential buildings, the project's architect of record (who must be an ENERGY STAR partner) must select an energy performance target and project future energy use, using Portfolio Manager, such that the project would attain an ENERGY STAR score of 75 or better. The architect must also complete a Statement of Energy Design Intent (stamped and signed by a Registered Architect or Professional Engineer) and submit letters of intent, both from the architect of record and building owner. Additional supporting information may also be provided with the application. Except for core-and-shell projects, the construction documents for the project must be at least 95% completed. There is no requirement, though, for the building to attain an ENERGY STAR score of 75 or greater once it has been constructed and occupied.

When the green building policy in the Policy Plan was being developed in 2006-2007, the Designed to Earn the ENERGY STAR program was relatively new, and most projects that had attained that recognition had not yet been completed. Because of the aspirational nature of the program and lack of a track record, staff did not recommend explicit recognition of this program in the green building policy. However, both the adopted Plan language and proposed language for the revised green building policy “encourage commitments to the attainment of the ENERGY STAR rating,” and it is staff's view that this guidance, by extension, supports related Designed to Earn the ENERGY STAR aspirational efforts. Information available from the Environmental Protection Agency suggests that there is at least some track record in regards to nonresidential projects that have both earned the Designed to Earn ENERGY STAR recognition and the ENERGY STAR designation for one or more years of operation.

Staff notes that, when the Planning Commission Environment Committee was considering the green building Plan amendment, there was discussion regarding whether any particular aspects of green building design should be emphasized. The committee ultimately recommended that flexibility be retained to allow for applicants to determine appropriate areas of emphasis, while identifying a series of green building practices that could be emphasized for residential proposals at or above the mid-point of the Plan density range.

If it is the desire of the Environment Committee to consider additional emphasis on energy efficiency as part of green building design, there may be merit in discussing whether the Designed to Earn the ENERGY STAR designation should be emphasized in light of the track

record noted above. Staff would not, however, support Designed to Earn the ENERGY STAR recognition as an alternative to other green building commitments recommended by the green building policy; rather, this recognition should be considered as a complementary effort. We view the Designed to Earn the ENERGY STAR program, at least as it relates to nonresidential development, as a statement of intent that can lead to operational benefits, as opposed to a comprehensive green building rating system for the design and construction of a building.

**MITRE Recommendation 4c: Third-Party Certifications and Performance Guidelines—
Benchmarking with Portfolio Manager**

[From Section 5.4 of the MITRE report]

To complement LEED, we recommend that the county . . . encourage annual benchmarking with Portfolio Manager.

The intent is to improve the efficiencies of the individual buildings, pave the way towards net-zero measurement, grow the ENERGY STAR databases, and improve the LEED rating systems themselves. In the former two cases, the benefits accrue to the building owner. He is hopefully able to use the benchmarking to reduce energy costs, and use of Portfolio Manager helps to pave the way to net-zero measurement as it becomes available. In the latter two cases, the practice means that Tysons Corner development helps to improve the state of the art and, therefore, has a longer and further reaching effect greater than just the new development itself.

[From Section 6.4 of the MITRE report]

. . . because LEED only considers design, FCG should also encourage at least Design to Earn ENERGY STAR and then annual reporting in ENERGY STAR Portfolio Manager to ensure energy-efficiency in practice. FCG should also strongly encourage building owners to help improve LEED by using Portfolio Manager to report energy performance back to the U.S. Green Building Council.

Staff Perspective

Portfolio Manager is a free online tool that is offered by the ENERGY STAR® program to enable a building owner/manager to track the energy and water use of his/her building over time. The owner/manager of a building can use Portfolio Manager to benchmark the energy and water use of the building against a national median for a similar building type (with the caveat that comparisons may be difficult absent normalization for climate and other factors) and can identify trends over time, which can highlight potential problems if a sudden increase in energy and/or water use is noted. Owners/managers of several buildings in a portfolio can compare energy and

water use among the various buildings in their portfolios and can use this information to detect possible problems (e.g., a building in the portfolio that is performing notably worse than other similar buildings). The ENERGY STAR recognition (see the discussion of the “Designed to Earn the ENERGY STAR” program above) is one benchmarking method.

Staff supports the tracking and evaluation of energy use for all buildings and therefore agrees with MITRE that building owners and managers should be encouraged to track and benchmark their energy use, whether that be done through Portfolio Manager or another similar tool. We note that the Facilities Management Department uses EnergyCAP software; FMD does not currently apply a module in that software that reports to Portfolio Manager. Staff is available to brief the Environment Committee on the county’s energy tracking efforts and the numerous benefits that have resulted from these efforts.

The Environment Committee has already considered, in its review of the green building policy, this issue of energy performance monitoring and ultimately recommended the addition of the following policy guidance to the green building policy:

Encourage and participate in periodic regional and local evaluations of the outcomes achieved through the application of sustainable land use principles and technology, in coordination with the energy and resources providers and industry. Such evaluations should be based on pooled, anonymous-source data, and should provide information helpful in decisions regarding the costs and benefits of green practices, including evaluations focused on innovative approaches and technology.

To date, a number of proffered commitments have been received in conjunction with zoning applications in the Tysons Corner Urban Center for the provision to the county (typically on an as-requested basis) of aggregated, non-proprietary energy and water consumption data. These data would not necessarily be provided through the Portfolio Manager program and would not necessarily be provided in terms of benchmarking, either through ENERGY STAR or other approach (e.g., an energy use index).

Staff recognizes that there may be interest, per MITRE’s recommendation, in the pursuit of proffer commitments to monitoring and reporting to the county (directly or through county access to Portfolio Manager data) of building energy use; MITRE has further recommended that the county report these data publicly (see MITRE recommendation 5). We recognize that the committee may wish to consider this approach in light of (1) the request from the Board of Supervisors for a Planning Commission review of the MITRE recommendations and (2) interest in energy performance monitoring and reporting that was expressed in testimony received during the Planning Commission’s recent public hearing on the green building policy revision. While staff supports energy tracking and benchmarking, we have expressed reservations in the past in regard to the idea of pursuing commitments during the zoning process for energy monitoring and reporting to the county; we continue to have a number of concerns with this idea:

- There are many variables that can affect building energy performance, including the character of operations of buildings (e.g., business hours only vs. 24-hour operations;

intensity of information technology uses). It may therefore be difficult to draw conclusions from an individual building's data or to provide for useful comparisons among buildings—with the exception of buildings with ENERGY STAR scores, there could be an “apples to oranges” comparison problem in attempting comparisons of energy use among buildings.

- Proffers are voluntary in nature, and staff anticipates that there may be unwillingness among applicants to commit to disclosure of energy use information without a broader mandate to do so—there may be particular reluctance to agree to the provision of data if the data were to be reported publicly (see MITRE recommendation 5). The result may be a patchwork of information that is provided to the county.
- While the county could negotiate commitments to the provision of energy monitoring data, the county cannot ensure the accuracy of the information that is provided.
- It may be difficult for the county to enforce commitments to the provision of energy use data, since the data cannot be provided until after occupancy permits will have been issued, and perhaps subsequent to bond release.
- Staff resources would be needed to collect the requested data. We currently lack the resources to do this.

Staff again stresses its support for the pursuit of energy use tracking and benchmarking for all buildings; it is not clear to staff, though, the extent to which negotiations of proffers for such efforts would be an effective or efficient mechanism through which such efforts should be encouraged. It is staff's view that broader public outreach efforts to owners/managers of buildings throughout the county may hold more promise in spurring voluntary tracking and benchmarking efforts (for both newer and older buildings alike); staff has been hoping to expand energy outreach efforts more broadly within the county and supports an emphasis on such efforts at this time.

With respect to MITRE's recommendation for the county to encourage building owners to report their energy performance to the U.S. Green Building Council (and we assume that this recommendation is intended for LEED certified buildings), staff notes that projects attaining LEED certification are now required by the U.S. Green Building Council to provide energy and water usage data for at least five years, so there is no need for the county to encourage owners of LEED projects to do this.

**MITRE Recommendation 4d: Third-Party Certifications and Performance Guidelines—
Net Zero and Passive House**

[From Section 5.4 of the MITRE report]

Now we turn to net-zero. Pilot efforts are underway to develop such buildings, but consensus has not yet emerged around appropriate measures or acceptable scores for good use as policy instruments. We recommend that Fairfax closely monitor developments pertaining to net-zero, and we presume that, in time, net-zero measures will be the best means of specifying performance - just not yet.

[From Section 6.4 of the MITRE report]

We also recommend that FCG pay close attention to the evolution of Passive House and net-zero methodologies, and as these practices mature, we recommend FCG use them to specify building performance targets.

Staff Perspective

Staff agrees with MITRE's recommendation to closely monitor developments pertaining to both net-zero* and Passive House design.** Staff would also note that both designs meet and exceed the current statewide building code as it pertains to energy.

In 2012, the county's Energy Efficiency and Conservation Coordinating Committee invited two local architects to present on the topic of Passive House Design. At the time, one of the architects was actively building a passive house in the county.

More recently, county energy staff participated in two Passive House tours – one in Arlington and the other in Montgomery County.

***Net-zero** refers to a building with zero net energy consumption used by the building on an annual basis, i.e., the amount of conventional grid-energy consumed is roughly equal to the amount of renewable energy created on the site. These buildings use conventional grid energy on cloudy or non-windy days, or at night when the sun isn't shining.

The term **Passive House refers to a rigorous design standard, for which thermal comfort can be achieved by a super-insulated and air tight building envelope coupled with energy efficient heating and/or cooling of the fresh air mass, which is required to fulfill sufficient indoor air quality conditions without a need for recirculated air. This results in ultra-low energy buildings that require little energy for space heating or cooling.

MITRE Recommendation 4e: Innovative Energy Proposals

[From Section 5.4 of the MITRE report]

We understand and fully support FCG's goal of making Tysons Corner an innovation center that drives improvement of building energy technologies, and so we recommend that FCG allow risk to trump certification. If a developer acting in good faith proposes a project with new, risky technologies that may offer a chance at breakthrough energy performance, and if that riskiness is enough to jeopardize FCG's usual preferred form of certification, then we suggest that the county accept a commitment to proceed with the risky process in lieu of a commitment to the certification (though maintaining a reporting component to the commitment) and proceed with the risky project. Even if the project fails to bring the hoped-for effect, the learning is still more valuable than the effects of a single certified building. If Fairfax indeed wants to be a leader here, it will have to support experimentation (which can fail to meet objectives), and sometimes it will have to be ahead of standards.

[From Section 6.4 of the MITRE report]

We do note, however, that certification guidelines (though not Portfolio Manager reporting) should not be applied rigidly if a developer wishes to be a test case for unproven energy-efficiency techniques or technologies. FCG wants Tysons Corner to be a center for building technology innovation, to do that it must give developers the freedom to experiment. FCG should coordinate with DOE programs to recruit suitable experimentation developments, and it should apply flexibility to its guidelines so that policies meant to encourage a minimum level of environmental stewardship do not hamper attempts to exceed it.

Staff Perspective

Staff agrees with the general approach outlined above as it relates to innovation and flexibility. As the Comprehensive Plan is a guide, it can therefore support such an approach. Staff, the Planning Commission and the Board of Supervisors should remain open to this idea, should such an opportunity for innovation present itself during the zoning process.

As the Planning Commission is aware, Fairfax County has a long history of implementing innovative, cutting-edge concepts and technology. The county's innovative and successful efforts to implement its environmental and energy goals consistently attract national recognition. For example, in 2011 the county received the American Planning Association's Daniel Burnham Award for its Comprehensive Plan for the Tysons Corner Urban Center. Its energy-specific awards include designation by the U.S. Environmental Protection Agency as an *Energy Star Partner*, a *Green Power Partner* for its green purchasing, and a *Landfill Methane Outreach Program Community Partner of the Year*; it also has received the Public Technology Institute's *Solutions Award* in the Sustainability category for its plug-in hybrid vehicle fleet trial*

*Fairfax County was the first county government in the U.S. to retrofit one of its hybrid vehicles to that of a plug-in hybrid.

MITRE Recommendation 5: Public Reporting

[From Section 5.4 of the MITRE report]

Since reporting is a requirement for ENERGY STAR participation, we also recommend that FCG encourage building owners to make public their energy consumption performance. From developers, FCG should negotiate access to the consumption data through Portfolio Manager, and the County should post the annual benchmarking results publicly online. DC already has similar laws on the books, so Fairfax would be well within the mainstream with the policy. Additionally, each facility should have posted its ENERGY STAR scores from each benchmarking along with its LEED Certification. The point is to encourage public pressure for improved energy-efficiency.

[From Section 6.5 of the MITRE report]

We assert that public reporting of energy consumption data and ENERGY STAR ratings will boost public awareness of the issue and, in turn, further encourage building operators to reduce consumption. We recommend that FCG take advantage of the reporting into Portfolio Manager and make that information public. FCG should post on its own web site the consumption data and comparison scores for all buildings in Tysons Corner that are being reported in the tool. Building owners should display their own results (raw data and performance scores to allow comparison) at the entrance of the building.

Staff Perspective

As stated in MITRE recommendation 4c above, “staff supports the tracking and evaluation of energy use for all buildings and therefore agrees with MITRE that building owners and managers should be encouraged to track and benchmark their energy use, whether that be done through Portfolio Manager or another similar tool.” Our perspectives on recommendation 4c identified, however, a series of concerns that we have had (and continue to have) regarding the idea of seeking proffers to building energy monitoring. We have similar concerns regarding MITRE’s recommendation for the county to post on-line the energy benchmarking results from privately-owned buildings.

In addition to the concerns identified in the staff perspective on recommendation 4c, we note the following:

- MITRE relates that “DC already has similar laws on the books, so Fairfax would be well within the mainstream with the policy.” Washington, D.C. and Fairfax County have very different legal authorities. While Washington, D.C. may have full authority to require building owners to submit energy monitoring data and to publicly disclose this

information, Fairfax County cannot adopt building regulations independent of the state building codes. Staff has not conducted a legal review of the question as to whether the county would have authority to impose monitoring and/or reporting requirements, but we question if there is such authority.

- While it is possible that the county would lack the authority to impose energy monitoring and reporting requirements, the county can accept proffered commitments to such efforts. However, as we noted earlier, proffers are voluntary in nature, and staff anticipates that there may be particular reluctance among applicants to commit to public disclosure of energy use information (or to the provision to the county of access to Portfolio Manager data for the purpose of disclosure). Absent such commitments, staff is not aware of a mechanism through which public disclosure of energy use in privately-owned buildings could be required.
- We have the same concerns regarding enforceability of commitments relating to public disclosure of energy use as we do for commitments to building energy monitoring.
- We lack staff resources to maintain and publicize energy use data.

Public awareness and leasing interest across the metropolitan Washington, D.C. region may increase marketplace pressure for public disclosure of energy use. Some building owners may decide to report their ENERGY STAR scores, Portfolio Manager profiles or other aspects of their operations in response to public pressure. MITRE recommends that the county take advantage of the reporting in the Portfolio Manager; for the reasons outlined above and in our perspective on recommendation 4c, staff does not support the pursuit of this recommendation.