Local Government Energy Assurance Guidelines

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Regardless of the type of system chosen, renewable energy systems should be carefully sized to keep costs down. (Nature's Power on Demand: Renewable Energy Systems as Emergency Power Sources, U.S. Department of Energy (EERE), October 1995.

Hardening Facilities Through Renewables

The term "hardening" refers to the process of strengthening the infrastructure of facilities—so that when natural disasters or other emergencies occur, communities are minimally disturbed and have use of critical operations, security functions, and communication devices. Hardening can also be viewed as closing the security gap in a facility where vulnerability is perceived such as tightening up on access to a secure facility. Strengthening the envelope of a facility to withstand a hurricane or bomb blast, or elevating critical equipment and power supplies to withstand flooding, are other typical examples of how local governments and communities can prepare for emergencies. Hardening the energy infrastructure in cities, communities, and individual facilities—often the most critical need for emergency situations—can be approached in a variety of reliable, effective and energy-efficient ways.

With respect to energy hardening, power backup systems must be effective and reliable so that public broadcast systems, hospitals, water/waste treatment plants, and decision-making networks, at the very least, remain in operation. Though backup systems are critical if all other systems fail, distributing and diversifying the power supply is the most effective way to protect against emergencies. This is typically referred to as distributed energy (DE). A building that generates its own power all the time using photovoltaics, with a fuel cell and battery backups for emergency situations, will allow building operation to continue even when the grid goes down. In addition, an energy-diverse community that harvests at least some of its energy from wind, large- or small-scale solar technologies, and hydropower—in addition to coal and natural gas—may be less affected in the event that one, two, or even three of these facilities become inoperable in an emergency.

D. Financing Energy Options

The purpose of this section is to provide some basic information on the various finance instruments, and how jurisdictions might use them in order to make cost-effective investments in energy back-up systems. In future versions of these guidelines, specific examples of how various financing options can be used to underwrite back-up systems will be addressed. Barriers to implementation and how to best address them will be included. In addition, loan programs (conditional sales agreements, installment purchase agreements etc), tax increment financing, certificates of participation and the like will be presented. We thank Neil Zobler, President of Catalyst Financial Group, Inc. for his keen insights and assistance in preparing this section. Neil can be reached at nzobler@catalyst-financial.com.

A final area under development is the utility finance market. Two of these are "on-bill" and tariff-based financing (typically termed "pay as you save"). Both offer potential for local governments. An excellent resource for this information is "Paying for Energy Savings Through Utility Bills" and is authored by Matthew H. Brown, President of InterEnergy Solutions. This document is to be published in 2008 by the Alliance to Save Energy.

Generally speaking, financing options are relevant to energy assurance in the context of these guidelines due to the fact that many jurisdictions will find that a number of their critical facilities are lacking adequate back-up power. Distributed and renewable energy systems are likely candidates for the financing options listed in this section.

In today's political and economic environment, assuring energy security and mitigating energy shortages is no easy task. According to The National Association of State Energy Officials (NASEO), "while there are many similarities and sharing of energy resources on regional bases, each state has its own unique set of needs, response mechanisms, laws and experience."

Energy assurance deals with a variety of hazards including natural disasters, infrastructure failures, civil disturbances, and terrorism or sabotage. This section on financing alternatives for energy assurance is limited to suggestions that local governmental organizations can implement in order to lighten the load on the energy infrastructure by reducing the amount of energy being used and by providing on-site backup power generation and/or renewable energy sources. It does not address financing energy infrastructure needs or the hardening of the energy assets (from a security perspective). It does not address EPA state revolving loan funds for water and waste water (which can include energy improvements), local incentives or grants. The financing suggestions mentioned below are related to equipment acquisition rather than funding behavioral modifications or training.

When financing these energy projects it is helpful to think about them as belonging to three different asset type groups: (1) energy efficiency, (2) renewable energy, and (3) backup power supply, on-site or distributed power generation. Traditional debt financing vehicles available to public sector organizations (e.g., loans, bonds, etc.) can be used to finance energy assets in all three groups. However, over the years, the financial community has developed financing structures that can take advantage of parameters that may be unique to energy projects and, even more specifically, the type of asset or project being financed, particularly energy efficiency and renewable energy projects.

Implementing **energy efficiency** projects (lighting, HVAC, motors, energy management systems, etc.) is a good place to start energy planning; it is always important to reduce the total KwH or therms consumed, which will immediately reduce utility bills. Not many local governments allow the operating budget dollars saved by installing these measures to be used to pay for the energy efficiency assets being installed. This makes implementing energy efficiency projects problematic for Energy Performance Contracting which can be funded in any number of ways including Tax Exempt Lease Purchasing Agreements. However, renewable energy projects that offer certain federal and local tax incentives are not attractive for local government self-financed projects because most local governments can not take advantage of them by definition, because they are tax exempt. In such cases financing vehicles like Power Purchase Agreements that can reflect the tax savings benefits in the pricing will be of interest to public sector organizations.

Renewable energy projects (e.g. photovoltaic cells, fuel cells, wind power, etc.) typically replace the energy being purchased directly off of the grid (i.e. from the local utilities) by energy being produced locally. Any energy savings comes from the ability to manufacture energy more efficiency and at a lower cost than if it had to be purchased from the local utility. **Emergency back-up power** (i.e., generators) are typically financed using traditional financing structures while **on-site or distributed power generation** (e.g., co-generation assets) lends itself to more flexible financing structures, which vary depending on who wants to own the asset. When the end-user owns the asset, leasing and loans may be appropriate, assuming they are not running into debt ceilings issues. Having a third party own the asset lends itself to having the end-user purchase output from the equipment, which may keep the asset off of the balance sheet of the end-user and avoid debt ceiling

Pricing and Term in Today's Market

In most instances, a financial institutions' willingness to underwrite an energy project is tied to the credit rating of the borrower rather than the nature of the project. Naturally, the pricing of the financing is directly tied to the borrowers' financial strength, demographics and term of the obligation. Term is further limited by the useful economic life of the asset being financed. While all sectors are feeling the pinch of tightening credit markets, public sector clients are perhaps the least affected of all sectors. While the Federal Reserve System's ("FED") recent actions have lowered the cost of funds, lender's pricing models will continue to reflect their profitability, tax appetite, liquidity, and risk tolerance. Mergers and acquisitions among the lenders reduce the competitive forces that helps keep pricing low. Poor historical performance (especially for those lenders in the sub-prime market) is forcing some lenders to look

towards new obligations to improve earnings, which means that the FEDs efforts to lower the cost of borrowing may not be trickling down to the borrower.

Financing Vehicles for Energy Projects

There are two basic approaches to funding projects: "pay-as-you-go" and "pay-as-you-use." Pay-as-you-go means paying for the project out of current revenues at the time of expenditure, in other words, paying cash. If cash is not available, the project gets postponed until it becomes available. Pay-as-you-use means borrowing to finance the expenditure with debt service payments being made from revenues generated during the useful life of the project. Because energy efficiency projects generate operating savings over the life of the project, the pay-as-you-use approach makes good sense.

Major capital projects are funded by some form of **debt**, which is categorized as either short term (for periods of less than one year) or long term (for periods greater than one year). Most borrowings by public sector organizations require citizen approval, either directly through referendum or indirectly through actions of an appointed board or elected council. However, revenue bonds and tax-exempt lease-purchase agreements may not require local voter approval (see details below).

Frequently used **short-term debt instruments** include bank loans (term loans or lines of credit), anticipation notes (in anticipation of bond, tax, grant or revenues to be received), commercial paper (taxable or tax-exempt unsecured promissory note that can be refinanced or rolled over for periods exceeding one year), and floating-rate demand notes (notes that allow the purchaser to demand that the seller redeem the note when the interest rate adjusts).

Long-term debt is frequently in the form of **bonds**. In the public sector, bonds fall into two categories: general obligation (GO) bonds and revenue bonds. **GO bonds** are backed by the issuer's full faith and credit and can only be issued by units of government with taxing authority. Because the issuer promises to levy taxes to pay for these obligations, if necessary, these bonds have the lowest risk of default and, therefore, the lowest cost. Interest paid on GO bonds is typically exempt from federal income taxes and may be exempt from state income taxes.

Revenue bonds are also issued by local governments or public agencies. However, because they are repaid only from the specific revenues named in the bond, they are considered to be riskier than GO bonds. Revenue bonds may not require voter approval and often contain covenants intended to reduce the perceived risk. Typical covenants include rate formulas, the order of payments, establishing sinking funds, and limiting the ability to issue new debt. Small municipalities that have difficulty issuing debt often add credit enhancements to their bonds in the form of bond insurance or letters of credit.

In the case of most energy efficiency projects, the source of repayment is the actual energy savings (considered part of the operating budget) realized by the project. When the approval process to obtain the necessary debt is a barrier, public sector organizations may be able to limit the repayment of the financing costs to their operating budget by using a tax-exempt lease purchase agreement. This solution may avoid the capital budget process altogether.

Tax-Exempt Lease-Purchase Agreements

Tax-exempt lease-purchase agreements are the most common public sector financing alternatives that are paid from operating budget dollars rather than capital budget dollars. A tax-exempt lease purchase agreement is an effective alternative to traditional debt financing (bonds, loans, etc.) because it allows a public organization to pay for energy upgrades by using money that is already set aside in its annual utility budget. When properly structured, this type of financing makes it possible for public sector agencies to draw on dollars to be saved in future utility bills to pay for new, energy-efficient equipment and related services today.

A tax-exempt lease-purchase agreement, also known as a municipal lease, is closer in nature to an installment-purchase agreement than a rental agreement. Under most long-term rental agreements or commercial leases (such as those used in car leasing), the renter or lessee returns the asset (the car) at the end of the lease term, without building any equity in the asset being leased. In contrast, a lease-purchase agreement presumes that the public sector organization will own the assets after the term expires. Further, the interest rates are appreciably lower than those on a taxable commercial lease-purchase agreement because the interest paid is exempt from federal income tax for public sector organizations.

In most states, a tax-exempt lease-purchase agreement usually does **not** constitute a long-term "debt" obligation because of non-appropriation language written into the agreement and, therefore, rarely requires public approval. This language effectively limits the payment obligation to the organization's current operating budget period (typically a 12-month period). The organization will, however, have to assure lenders that the energy efficiency projects being financed are considered of *essential use* (i.e., essential to the operation of your organization), which minimizes the non-appropriation risk to the lender. If, for some reason, future funds are not appropriated, the equipment is returned to the lender; and the repayment obligation is terminated at the end of the current operating period without placing any obligation on future budgets.

Public sector organizations should consider using a lease-purchase agreement to pay for energy efficiency equipment and related services when the projected energy savings will be greater than the cost of the equipment (including financing), especially when a creditworthy energy service company (ESCO) guarantees the savings. If your financial decision makers are concerned about exceeding operating budgets, they can be assured that this will not happen because lease payments can be covered by the dollars to be saved on utility bills once the energy efficiency equipment is installed. Utility bill payments are already part of any organization's normal year-to-year operating budget. Although the financing terms for lease-purchase agreements may extend as long as 20 years or more, they are usually less than 12 years and are limited by the useful life of the equipment.

There may be cases, however, when tax-exempt lease-purchase financing is not advisable for public sector organizations; for example, when (1) state statute or charter may prohibit such financing mechanisms; (2) the approval process may be too difficult or politically driven; or (3) other funds are readily available (e.g. bond funding that will soon be accessible) or excess money exists in the current capital or operating budgets.

How is Debt Defined in the Public Sector?

It is important for managers to be aware of the different interpretations of "debt" from three perspectives—legal, credit rating, and accounting. As mentioned above, most tax-exempt lease-purchase agreements are not considered "legal debt," which may prevent the need to obtain voter approval in your locality. However, credit rating agencies, such as Moody's and Standard & Poor's, do include some or all of the lease-purchase obligations when they evaluate a public entity's credit rating and its ability to meet payment commitments ("debt service"). These two perspectives (legal and credit rating) may differ markedly from the way lease-purchase agreements are treated (i.e., which budget is charged) by your own accounting department and your organization's external auditors.

In general, lease-purchase payments on energy efficiency equipment are small when compared to the overall operating budget of a public organization. This usually means that the accounting treatment of such payments may be open to interpretation. Because savings occur only if the energy efficiency projects are installed, the projects' lease-purchase costs (or the financing costs for upgrades) can be paid out of the savings in the utility line item of the operating budget. Outside auditors may, however, take exception to this treatment if these payments are considered "material" from an accounting perspective. Determining when an expense is

"material" is a matter of the auditor's professional judgment.[2] While there are no strictly defined accounting thresholds, as a practical guide, an item could be considered material when it equals or is greater than 5% of the total expense budget in the public sector (or 5% of the net income for the privtl rarely be considered "material" using this practical guideline.

What are Energy Performance Contracts?

In most parts of the United States, an energy performance contract ("EPC") is a common way to implement energy efficiency improvements. It frequently covers financing for the needed equipment, should the organization chose not to use internal funds. In fact, every state (except Wyoming)[3] has enacted some legislation or issued an executive directive to deal with energy efficiency improvements. Properly structured EPCs can be treated as an operating, rather than a capital expense.

The definition of a performance contract may be found in some state statutes; however, in general, it is not clearly defined and usually includes a variety of services such as energy audits, designing, specifying, selling and installing new equipment, providing performance guarantees, maintenance, training, measurement and verification protocols, financing, indoor air quality improvements, and more. One major benefit of using a performance contract is the ability to analyze the customer's needs and craft a custom agreement to address the organization's specific constraints due to budget, time, personnel, or lack of internal expertise. This includes choosing the financing vehicle that best suits the organization's financial and/or tax strategies.

Designed for larger projects, performance contracting allows for the use of energy savings from the operating budget (rather than the capital budget) to pay for necessary equipment and related services. Usually there is little or no upfront cost to the organization benefiting from the installed improvements, which then frees up savings from reduced utility bills that would otherwise be tied up in the operating budget. An energy performance contract is an agreement between the organization and an ESCO to provide a variety of energy saving services and products. Because these improvement projects usually cover multiple buildings and often include upgrades to the entire lighting and HVAC systems, the startup cost when *not* using an EPC may be high and the payback period lengthy. Under a well-crafted EPC, the ESCO will be paid based on the verifiable energy savings.

The ESCO will identify energy saving measures through an extensive energy audit, and then install and maintain the equipment and other upgrades. This includes low- and no-cost measures which contribute to the projects overall savings. The ESCO works closely with the client throughout the approval process to determine which measures to install, timing of the installations, staffing requirements, etc. The energy savings cover the costs of using the ESCO and financing for the project.

The most common type of performance contract is called a "**Guaranteed Savings Agreement,**" whereby the ESCO guarantees the savings of the installed energy-efficiency improvements (equipment and services). The ESCO assumes the performance risk of the energy-efficient equipment so that if the promised savings are not met, the ESCO pays the difference between promised savings and actual savings. If the savings allow, a performance contract may include related services such as the disposal of hazardous waste from the replacement of lighting systems, or from the removal of asbestos when upgrading ventilation systems. The ESCO usually maintains the system during the life of the contract and can train staff to assist or to continue its care after the expiration of the contract period. The ESCO can also play a major role in educating the customer organization about its energy use and ways to curb it.

[2] According to Dr. James Donegan, Ph.D. (Accounting), Western Connecticut State University, an amount is "considered material when it would affect the judgment of a reasonably informed reader when analyzing financial statements."

[3] http://www.ornl.gov/info/esco/legislation/

In summary, performance contracts typically contain three identifiable components: a **project development agreement** indicating which measures will be implemented to save energy (and money); an **energy services agreement** indicating what needs to be done after the installation to maintain ongoing savings; and a **financing agreement.** Organizations may choose to finance the projects independently of the ESCO, especially when they can access lower cost financing on their own (as in the case of public sector organizations when accessing tax-exempt funding). It is important to note that savings are measured in kWh and therms, and then translated into dollars at the current market price for electricity and natural gas.

Regardless of the type of energy services agreement, it is important to remind the reader of two critical components that are needed to ensure that the energy performance and operational goals are met: (1) Commissioning, and (2) Measurement and Verification. Commissioning is the process of making sure new buildings function as intended and communicating the intended performance to the building management team. This usually occurs when the building is turned over for occupancy. Ongoing and carefully monitored measurement and verification protocols are vital to ensure the continuing performance of the improvements, especially when the energy savings are the source of the financing repayment.

Power Purchase Agreements (PPAs), also know as Design–Build–Own–Operate Agreements, are ones in which the customer purchases the measurable output of the project (e.g., kilowatt hours, steam, hot water) from the ESCO or a special purpose entity established for the project, rather than from the local utility. And they purchase at lower rates or on better terms than they would have received by staying with the utility. These agreements work well for on-site energy generation and/or central plant opportunities. PPA's are frequently used for renewable energy and Cogeneration projects (also known as Combined Heat and Power projects). Due to the complexities of the contracts, projects using PPAs are typically very large. PPA's are frequently considered "off balance sheet" financings.

Commercial Leasing

Energy efficiency equipment that is considered by the Internal Revenue Service (IRS) as personal property (also known as "movable property" or "chattels") may be leased. The traditional equipment lease is a contract between two parties in which one party is given the right to use another party's equipment for a periodic payment over a specified term. Basically, this is a long-term rental agreement with clearly stated purchase options that may be exercised at the end of the lease term. Commercial leasing is an effective financing vehicle and is often referred to as "creative financing." Leases can be written so the payments accommodate a customer's cash flow needs (short-, long-, or "odd-" term; increasing or decreasing payments over time; balloon payments; skip payments, etc.). Leases are frequently used as part of an organization's overall tax and financing strategy and, as such, are mostly used in the private sector.

From a financial reporting perspective, however, commercial leases fall into only two categories (an **operating lease** or a **capital lease**); each has substantially different financial consequences and accounting treatment. The monthly payments of an **operating lease** are usually lower than loan payments because the asset is owned by the lessor ("lender"), and the lessee's ("borrower's") payments do not build equity in the asset. The equipment is used by the lessee during the term, and the assumption is that the lessee will want to return the equipment at the end of the lease period. This means that the lease calculations must include assumptions that the residual value of the leased asset can be recovered at the end of the lease term. In other words, equipment that has little or no value at the end of the lease term will probably not qualify under an operating lease. For example, lighting systems would not qualify, while a well maintained generator in a cogeneration project might. Operating leases are considered "off balance sheet" financing, and payments are treated as an operating expense.

A common **capital lease** is a "finance lease," which is similar to a conditional sales agreement because the asset must be reflected on the lessee's (borrower's) balance sheet. A finance lease is easily recognized because the customer

can buy the equipment at the end of the lease term at a stated price that is less than its fair market value ("bargain purchase option"). For example, a lease with a one dollar purchase option is clearly a capital lease. Other conditions that define a capital lease deal with the term of the lease, transfer of ownership, and lessor's equity in the asset.[4]

Public sector organizations frequently lease equipment. However, because most public sector organizations are tax-exempt, tax strategies are not usually a consideration when deciding which type of lease to enter into.

Sources of Funds and Resources

In addition to the traditional commercial lenders, financial institutions, and local community banks, a number of states do provide access to special funds designed to promote the installation of energy efficiency and renewable energy projects. In states where the electricity industries without regard to whether they have been restructured, or not **system benefits charges** (also know as **public benefits funds**) may be added to the utility bills in order to create a pool of funds that are earmarked to help support renewable energy, energy efficiency, low-income customer programs, energy R&D, or other functions that the competitive market is unlikely to provide after deregulation. This may translate into rebates, subsidized, low cost or zero interest financing programs, and technical support. When available, energy projects should take advantage of these incentives.

A good place to find a listing of these benefits is at www.dsireusa.org (DSIRE), an acronym for Database of State Incentives for Renewables and Energy, is "a comprehensive source of information on state, local, utility, and federal incentives that promote renewable energy and energy efficiency." (See Appendix A for more information). Also, the Alliance to Save Energy is publishing (2008) "State Energy Efficiency Financing Policies" by Matthew H. Brown, President of InterEnergy Solutions.

If energy savings is an important source of repayment of financing, ENERGY STAR has developed a tool using Microsoft EXCEL® called the Cash Flow Opportunity Calculator ("CFO Calculator") that is helpful when structuring financing. It was developed to help decision-makers address three critical questions about energy efficiency investments: (1) How much of the new energy efficiency project can be paid for using the anticipated savings? (2) Should this project be financed now, or is it better to wait and use cash from a future budget? (3) Is money being lost by waiting for a lower interest rate? In addition, this set of spreadsheets helps create a sense of urgency about implementing energy efficiency projects by quantifying the costs of delaying the project implementation. It is in the public domain and can be downloaded from www.energystar.gov/ia/business/cfo_calculator.xls.

Federal Government (IRS): Clean Renewable Energy Bond (CREB) Program

Unlike normal bonds that pay interest, tax-credit bonds pay the bondholders by providing a credit against their federal income tax. In effect, this tax-credit bond provides interest-free financing for certain renewable energy projects. CREBs provide an effective new financing tool for public power companies, which are non-profit and cannot directly benefit from other tax credits.

These tax-credit bonds may be issued by qualified bond lenders, cooperative electric companies, and government bodies (including public power systems). The borrower must be a cooperative electric company or a government body, and must use the financing for wind, biomass (including landfill gas), geothermal, or solar energy projects, or for hydropower expansions, trash combustion facilities, or refined coal production facilities. The act allows, in total, government bodies to borrow up to $500 million for such projects, with at least $300 million set aside for cooperative electric companies. Since the federal government essentially pays the interest via tax credits, the IRS must allocate such credits in advance.

[4] See Financial Accounting Standards Board Statement of Financial Accounting Standards No. 13 for more information. Note that the financial treatment of Operating Leases is currently under review and may change.