SECURITIZING UTILITY AVOIDED COSTS:

CREATING AN ENERGY EFFICIENCY "PRODUCT"

FOR

PRIVATE INVESTMENT IN WAP

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PART ONE: INTRODUCTION

1.1 THE PROPOSAL

This paper proposes a new type of security instrument (*i.e.*, an investment "product") through which to use private investment to finance energy efficiency improvements (hereafter EEI) through state Weatherization Assistance Programs (WAP). The instrument is a revenue bond supported by a utility's contract to devote the WAP-generated avoided costs to bond repayment. The bonds would be issued by a state WAP agency delivering EEIs to low-income utility customers.

Under this proposal, the stream of utility avoided costs generated by federally-funded WAP investments will be dedicated to repay bonds financing additional EEIs implemented by the WAP agency. The proposal recognizes that a utility experiences avoided costs when EEIs are installed, even when those EEIs are *not* installed at utility expense. This proposal captures those avoided costs to be used to help finance further EEI measures.[\1\]

The centerpiece of this idea is to capture *utility* avoided costs generated by *non-utility* EEI investments. Thus for example, if a state Weatherization Assistance Program (WAP) uses $1.0 million to weatherize low-income homes, the stream of utility avoided costs arising from that weatherization will reach levels as set forth in Attachment A. These avoided costs will be used to support additional EEI investments by the WAP agency.

The proposal involves two different transactions. The first transaction is a contract between the utility and the state WAP agency through which the utility agrees to pay the WAP agency the avoided costs generated on the company's system by the WAP energy efficiency investments. The second transaction is a bond issuance, using the utility avoided cost contract as the basis for repayment. The bond issuance would be equal in value to the net present value of the utility's avoided costs over the estimated life of WAP's installed measures.

\1\ The additional measures could involve additional households, or could involve efficiency measures not subject to installation using federal dollars (*e.g.*, water and non-heat related efficiency improvements).

1.2 THE CONCEPTUAL BASIS

What is proposed here is a development of the concept of "asset securitization" for purposes of financing low-income energy efficiency. One commentary defines the "securitization of assets" as follows:

> the sale of equity or debt instruments representing ownership interests in, or secured by, a segregated, income-producing asset or pool of assets, in a transaction structured to reduce or reallocate certain risks inherent in owning or lending against the underlying assets and to ensure that such interests are more readily marketable and, thus, more liquid than ownership interests in and loans against the underlying assets.[2]

The concept of "securitizing assets" is also often referred to as "structured finance." According to one analyst, one primary purpose of "structured finance" is to "separat(e) the source of payment from the company itself."[3] In such a transaction, the potential buyer of the securities looks to the cash flow from the asset, and not necessarily to the credit of the selling company, for repayment.[4]

The bond proposed here falls *precisely* within this definition. The "income producing asset" underlying the bond is the utility's contract to pay the WAP-generated avoided costs to the WAP agency. The "source of repayment" is separated from the WAP agency itself, since the source of repayment is the contract based on the avoided costs. The potential buyer of the securities looks to the cash flow from the contract, and not to the credit of the WAP agency, for repayment.

1.3 REQUIRED REGULATORY ACTION

Currently, a utility's avoided costs are only calculated when the utility, itself, engages in the financing and/or delivery of "demand side management" (DSM) measures. The philosophy, of course, is that by installing DSM measures, the utility avoids the fixed and variable costs

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[2] Shenker and Colletta, "Asset Securitization: Evolution, Current Issues and New Frontiers," 69 ***Texas Law Review*** 1369, 1374-75 (1991).

[3] Schwartz, "Structured Finance: The New Way to Securitize Assets," 11 ***Cardozo Law Review*** 607, 607 (1991).

[4] *Id.*

of production. The value of those avoided costs must be compared to the cost of the DSM measures to determine whether it is cost-effective for the utility to pursue the DSM rather than the production and delivery of energy.

In contrast, this proposal recognizes that whether or not an energy efficiency measure generates avoided costs to the utility does not depend on who finances and delivers the energy efficiency measure. An energy efficiency measure delivered by a state WAP agency, in other words, will generate the *same* avoided costs to the utility whether it is financed by the utility, itself, or by the federal government, or by some other means. Identical measures should result in identical avoided costs irrespective of their source of financing. Accordingly, it is reasonable to tap those utility avoided costs as a contribution to the delivery of energy efficiency investments by non-utility parties.

The required regulatory action thus involves three steps. First, there is a need to obtain a Public Utility Commission (PUC) decision allowing the calculation of what utility avoided costs are generated by WAP-generated energy efficiency investments. Second, there is a need to obtain a PUC decision allowing the dedication of those avoided costs to serve as a "contribution" to the *private* financing of further WAP investments. This contribution comes in the form of bond repayment. Third, there would need to be regulatory approval of the projected energy and demand savings for which avoided costs will be paid.[5] The avoided costs, themselves, should not be subject to dispute within any given bond proposal. Those costs will have already been established for purposes of assessing the cost-effectiveness of utility-provided DSM programs.[6]

1.4 THE PURPOSE OF USING BONDS

One might query that if a state WAP agency can convince a utility to make a contribution of its avoided costs toward repayment of WAP-issued bonds, why doesn't that agency simply rely upon utility financing of the EEIs with which to begin, without going through the bonding process.

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[5] For a state WAP agency, these savings would become routine. Average savings generated by WAP investments, when the program is viewed as a whole, would not be likely to substantially vary from year to year.

[6] The regulatory approvals necessary to obtain private financing for a WAP agency would thus be minimal. Having a standardized average per household savings, on the one hand, and an avoided cost that has been set in an independent proceeding on the other hand, would result in a straightforward and noncontroversial calculation of what avoided costs could be counted on for any given level of WAP bond financing.

The response is several-fold. First, as with any financing, the use of the proposed bonds allows the WAP agency to obtain financing for large scale energy efficiency programs up-front. Rather than implementing the additional improvements as the utility savings arise, in other words, the entire additional WAP investment can be made in Year One with the benefits of the investment flowing from Year One. Each year of federally-funded WAP investment would generate additional private investment backed by the utility's avoided costs.

Second, the use of avoided cost bonds will leverage other private investment. As outlined below, if a WAP agency can be financed in part through utility avoided cost bonds, additional contributions can be brought to bear on paying for the parts of the EEI program *not* covered by those utility avoided costs.

Third, the use of avoided cost bonds will free the WAP agency from being required to cost-justify measures from the perspective of the utility. If, in other words, the WAP agency wishes to match the utility's avoided cost contributions with federal WAP dollars, or with contributions from the property owner, or with local CDBG dollars, or with some debt financing from the state housing finance authority (HFA), or with some other type of funds, it would be free to do so. The utility would be assured that it is no worse off because of its investment since its contribution is based upon actual avoided costs generated by the original WAP investment in the first place. There is, however, no reason to restrict cost-effectiveness determinations by the WAP agency to a cost-effectiveness based only on utility avoided costs.

Finally, the additional advantages of the bonding program are discussed below. Some of these advantages are to the parties seeking to make the EEI investment; some of them are to the utility; some of them are to society at large.

PART TWO: THE STRUCTURE OF THE BOND PROCESS.

2.1 THE OPERATION OF THE AVOIDED COST CONTRIBUTION

This proposal posits that private financing would be used to help pay for the installation of energy efficiency improvements. Thus, for example, a WAP agency would decide to raise $5.0 million through the bond market to supplement its WAP budget. \7\

The WAP agency seeking the financing would seek regulatory approval of a bond issue which pledges the avoided costs to be generated by its EEI investments as the means of bond repayment. The EEI to be financed through the bond would be described in a "prospectus" or similar such disclosure statement just like any other project to be financed through a private investment. The prospectus would describe the measures to be installed, the projected savings, and other facts about the project deemed relevant to the investment.

A key to this process is the use of "stipulated" savings, a well-established concept in evaluations of environmental programs. \8\ Regulators, program designers, and low-income advocates can work together to develop a comprehensive list of "stipulated savings" measures to facilitate the advance financing mechanism.

Moreover, the use of stipulated savings is gaining credence in the energy efficiency arena. In March 1993, for example, the EPA

\7\ Assuming that the process works for WAP-provided energy efficiency measures, it could be extended to other entities providing efficiency improvements as well. For example, a Housing Finance Agency (HFA) might seek to raise $2.0 million to help finance EEIs in new construction or substantial rehabilitation. A local municipal government might seek to raise $1.0 million in private funds to finance EEIs in rehab projects funded with Community Development Block Grant (CDBG) dollars.

\8\ The Environmental Protection Agency's Conservation Verification Protocols include a Guidance Document (developed for use in implementing the Clean Air Act Amendment SO_x allowance system), which lists "stipulated" savings from some measures, and permits use of so-called "engineering estimates" of savings per measure that, when multiplied by measures actually installed, give an estimate of the energy savings of the program.

announced "Conservation Verification Protocols" for the assignment of credits under the Acid Rain allowances program of the Clean Air Act Amendments of 1990.[9] The EPA guidelines include so-called "stipulated" savings from particular DSM measures,[10] including exit sign light replacements (which can be a measure in multifamily programs), high-efficiency refrigerator replacement, and water heater insulation blankets. EPA also applies a "gross-to-net" conversion factor to convert these consensus engineering estimates to acceptable savings estimates.

Two types of projects would seem likely to seek private financing given the backing of a securitized utility avoided cost bond backed by stipulated savings. On the one hand, there would be major multi-family developments which are seeking to pursue energy efficiency measures. On the other hand, there would be programs which "package" individual single family units together into large blocks. A state WAP agency is an ideal example where such stipulated savings would work. WAP agencies make substantial annual investments in energy efficiency. The investments are relatively predictable and stable. They involve generally similar measures, both as between years and as between geographic areas.

2.2 THE APPLICATION OF THE PRIVATE FINANCING TO WAP EFFICIENCY IMPROVEMENTS

The contribution obtained through the private financing obtained through these "avoided cost bonds" might potentially cover the entire cost of additional EEI measures installed by the WAP agency. However, the private financing obtained through the "avoided cost bonds" might also simply be only *one* source of contribution to the total cost of the EEI, one that does *not* cover the entire cost of the EEI. Two illustrations help explain. The first illustration is the "full coverage" scenario while the second illustration is the "contribution" scenario.

[9] EPA, Order No. 430/9/B-92-002.

[10] As well as stipulated useful lives of common conservation measures.

2.2.1 The Full Coverage Scenario

A state WAP agency identifies 10,000 low-income households to whom it wishes to deliver ceiling insulation. The cost of the ceiling insulation, including administrative costs, is $700 per household. The total cost of this WAP effort is thus $7.0 million (10,000 x $700 = $7.0 million). Each ceiling insulation installation will generate annual levelized avoided costs to the utility of $81.[\11\]

The $7.0 million up-front cost of the program is managed through the sale of a bond. The bond is sold at par for $7.0 million with an interest rate of 7.0 percent. If the bond has a fifteen year term, the annual payment necessary to repay the bond would be $768,862.

The revenue stream to be dedicated to the repayment of the bond is the utility's avoided cost. Thus, in this situation, the total financing of the ceiling insulation would be paid by the utility's avoided costs. A revenue stream of $81 x 10,000 = $810,000 *per annum* is the contribution from the utility's avoided costs. Clearly, the utility's avoided costs provide full coverage of the debt service.

2.2.2 The Contribution Scenario

2.2.2.1 The Contribution Scenario: Illustration 1

A state WAP agency identifies 10,000 low-income households to whom it wishes to deliver comprehensive weatherization services. The cost of the weatherization, including administrative costs, is $1,800 per household. The total cost of this WAP effort is thus $18.0 million (10,000 x $1,800 = $18.0 million). By assumption, the WAP weatherization services will generate annual levelized avoided costs for the utility of $120.[\12\]

Because the net present value of the avoided costs per household over a fifteen year useful life would be only $1,093,[\13\] it is clear that

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\11\ The purpose here is not to argue about the proper level of avoided costs. However, the assumptions which go into this $81 are as follows: a 12,000 kWh annual consumption, 60 percent of which is devoted to heating. The ceiling insulation will save 25 percent of the heating consumption. The levelized avoided cost over the 15 year useful life of the insulation is $0.045 per kWh saved.

\12\ This is not a calculated amount, it is merely a figure used, by assumption, for purposes of illustrating the contribution scenario.

\13\ Assuming a seven percent discount rate.

the bond, standing alone, will not be sufficient to pay for the entire cost of the WAP full weatherization services. The WAP agency thus does two things:

- First, the WAP agency issues bonds for $10.930 million (the levelized net present value of $1,093 per household, times 10,000 households) to gain the utility contribution toward its full weatherization services program. This bond issue represents the amount that can be repaid by the utility's avoided cost stream of $120 per household ($1,200,000 for all 10,000 households). The annual debt service for a $10.930 million bond, for 15 years at seven percent, is $1,200,055.

- Second, the WAP agency covers the remainder of its program costs with a $7.070 million contribution from its WAP appropriation ($18.0 million - $10.930 million = $7.070 million).

2.2.2.2 The Contribution Scenario: Illustration 2

The magic of the "contribution" scenario is that the remainder of the EEI costs, *i.e.*, those EEI costs *not* covered by the avoided cost bonds, can be made up by any of a variety of revenue sources. Illustration 1 discussed above assumes a contribution from the state WAP agency for low-income weatherization. That contribution, however, could just as easily come from increased user payments.

For example, a state WAP agency identifies 1,000 low-income units which to whom it wishes to deliver comprehensive energy efficiency improvements. The cost of the efficiency improvements, including administrative costs, is $1,800 per household. The total cost of this WAP effort is thus $1.8 million (1,000 x $1,800 = $1.8 million). As in the illustration above, by assumption, the WAP energy efficiency services will generate annual levelized avoided costs for the utility of $120.[14]

Again, because the net present value of the avoided costs per household over a fifteen year useful life would be only $1,093,[15] it is clear that the avoided cost bond, standing alone, will not be sufficient to pay for the entire cost of the WAP energy efficiency services. The WAP thus does two things:

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[14] Again, this is not a calculated amount, it is merely a figure used, by assumption, for purposes of illustrating the contribution scenario.

[15] Assuming a seven percent discount rate.

- First, the WAP agency issues bonds for $1.093 million to gain the utility contribution toward the energy efficiency program. This bond issue represents the amount that can be repaid by the utility's avoided cost stream of $120 per household ($120,000 for all 1,000 households). The annual debt service for a $1.093 million avoided cost bond, for 15 years at seven percent, is $120,006.

- Second, the WAP agency covers the remainder of the energy efficiency program costs with required payments from the property owners in whose buildings the efficiency measures have been installed. This program would work particularly well in WAP efforts directed toward rental housing.[16]

2.2.2.3 The Contribution Scenario: Illustration 3

Outside the WAP context, just as the payment for the EEI costs not covered by the utility avoided cost bond could come from individual households, the payment could come from institutional customers as well. The only difference would be in the magnitude of the payments, not in the operation of the financing. The contribution, in other words, could just as easily come from customer payments arising out of the reduced energy bills being experienced.

A local Public Housing Authority identifies a $1.0 million energy efficiency improvement that it wishes to pursue in a local housing project. By assumption, this improvement will generate annual levelized avoided costs for the utility of $30,000.[17]

Because the net present value of the avoided costs over a fifteen year useful life would be only $273,237,[18] it is clear that the bond, standing alone, will not be sufficient to pay for the entire cost of the PHA energy efficiency services. The PHA thus does two things:

- First, the PHA issues bonds for $273,237 to gain the utility contribution toward its energy efficiency services program. This bond issue represents the amount that can be repaid by the utility's avoided cost stream of $30,000 per year. The annual debt

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[16] Indeed, it is not uncommon even today for states to require landlord contributions toward WAP-installed efficiency improvements.

[17] This is not a calculated amount, it is merely a figure used, by assumption, for purposes of illustrating the contribution scenario.

[18] Assuming a seven percent discount rate.

service for a $273,237 utility avoided cost bond, for 15 years at seven percent, is exactly $30,000.

- Second, the PHA covers the remainder of its program costs with payments from its operating budget. Assuming it obtained conventional financing for the remainder of the energy efficiency improvements ($1.0 million minus $273,237 = $726,763), a 15 year fixed rate loan at 7.5 percent would represent an additional payment of $82,333 per year.

2.3 THE CALCULATION OF COST-EFFECTIVENESS

Given the mixed contributions[\19\] toward the financing of the energy efficiency improvements, it is critical to articulate with specificity the perspective from which the "cost-effectiveness" of the EEIs will be calculated.

Cost-effectiveness will be calculated from the perspective of the customer.[\20\] Simply because there is a utility avoided cost contribution does not mean that the cost-effectiveness of the measure is to be calculated from the perspective of the utility.

The utility's only interest is in determining whether the EEIs to be implemented by the initial WAP appropriation will in fact generate the avoided costs that are assumed for purposes of the avoided cost bond.[\21\] The utility's avoided costs arising from the privately financed EEIs are *not* used to calculate the cost-effectiveness of the EEI. Whether the privately-financed EEI is cost-effective from the perspective of the utility is of no significance.[\22\]

2.4 INVESTOR INTEREST IN CONTRIBUTION

\19\ Some contribution comes from the utility's avoided costs while others come from non-utility parties.

\20\ The "customer" will the WAP agency. For purposes here, in other words, the term "customer" does not mean ultimate end user. The term "customer" is used in lieu of a better term at this point. Some analysts in other asset securitization contexts use "sponsor" and other analysts use other terms.

\21\ The utility avoided costs generated by measures installed as a result of the private financing, in other words, simply accrue as a benefit to the utility.

\22\ "Cost-effectiveness" from the utility's perspective is ensured by limiting the commitment of avoided costs to only that level of avoided costs generated by the original WAP appropriation.

Under this proposal, whether or not the bond paid the entire cost of the EEI would be irrelevant to the investor. Investors would receive a return both of and on their investment through the avoided costs associated with the EEI. The funds from which the bond would be paid, in other words, are represented by the utility's avoided costs. The investor should be indifferent to the extent to which, if at all, the EEI, itself, generates additional energy and bill savings.

2.5 THE POTENTIAL FOR PRIVATE PLACEMENT

The advantages of using bonds based on securitized avoided costs could be made more available to even smaller issuers through the use of private placement bonds. In such circumstances, the WAP agency delivering the EEIs would use an institution such as Excelsior Capital Corporation (or some other "economically targeted initiative" [ETI] investor) as the institution with whom the bonds are privately placed. In so doing, the agency would: (a) avoid the fees associated with getting the bonds rated; and (b) avoid the transaction costs associated with using an underwriter to vend the bonds on the market. With a private placement for avoided cost bonds, there would be no underwriter, no bond market, no broker's fees.[23]

Private placement bonds involve the direct sale of a bond issue to an investor.[24] In a private placement, the issuing agency would come directly to the investor to negotiate and obtain financing.[25] Since the terms of the bond issuance are more flexible under a private placement, negotiations would need to occur. For example, on the one hand, the issuing agency may seek flexibility in drawing down the loan as needed.[26] On the other hand, over the past several years, many private placement buyers of utility debt have been agreeing to rates on 30-year debt that are more favorable than those available in the public market.[27] However, the low cost is "paid for" through inclusion of either a

[23] Because of the institutional expertise of investors purchasing such bonds, private placement bonds are exempt from most federal registration and disclosure requirements.

[24] Securities regulations are generally intended to protect investors by promoting full disclosure of information thought necessary to informed investment decisions. In light of the required sophistication of private placement investors, however, private placements are exempt from such requirements because there is no practical need for the protection of the Act. Investors who will purchase private placement financings, such as Fannie Mae, include persons with exceptional business experience and a position where they have regular access to all the information and records that would show the potential for the corporation. *See*, ***Lively v. Hirschfeld***, 440 F.2d 631, 633 (10th Cir. 1971); ***S.E.C. v. Ralston Purina Co.***, 346 U.S. 119, 124-125 (1953).

[25] In contrast, a public bond issue would go through an underwriter, who would sell bonds to smaller investors with whom the WAP agency never has direct contact.

[26] Richards, ***Fundamentals of Development Finance***, at 57 (1983).

[27] The covenants and related provisions in a private placement transaction will often be more detailed and stricter than in the case of the typical bank loan. One type of more typical restrictive covenant involves restrictions on prepayment. This arises because insurance companies are the primary purchasers of private placement. As long-term, fixed rate investors, these insurance

no-call feature or a "make-whole" provision, which essentially eliminates any economic incentive for a utility to refinance should interest rates fall.\28\ Even given these negotiations, however, the time frame for consummation of private placement financing has dropped to 10 - 45 days, with the result that a private placement can more readily compete in terms of time and transaction costs with a bank term loan as a source of funds for the issuer.

In the typical private placement, the closing conditions are not complex, consisting principally of evidence that the necessary corporate approval has been obtained for the issuance of the notes, a certificate down-dating the issuer's closing representations, evidence that the issuer is in compliance with the covenants in the note agreement, and a legal opinion of its counsel.

In sum, the use of privately placed avoided cost bonds for residential EEIs will generate several advantages. It will reduce transaction costs. It will gain regulatory flexibility. It will gain the financing advantages associated with bonds of greater security. And, while these advantages are not unique to any *particular* investor's involvement in EEI financing, individual investors could certainly pioneer the efforts in this regard.

(..continued)

companies have concerns about deferring or otherwise limiting prepayments by the issuer.

\28\ Mosbacher and Broderick, "The Elimination of the Refinancing Option," ***Public Utilities Fortnightly***, Vol. 127, No. 7, at 42 (April 1, 1991).

PART THREE: THE RISKS OF THE ENDEAVOR.

3.1 RISKS TO INVESTORS

3.1.1 Changes in utility avoided costs

3.1.1.1 The risk

The first apparent risk to the investor from an avoided cost bond program is the risk that a utility's avoided costs would plummet after the sale of the bonds, thus threatening either the return of or on investment. The risk that a 1993 avoided cost of $0.04 per kWh might fall to $0.005 in 1997 must be addressed.

A closer examination of this "risk" reveals that, in fact, it does not exist in reality. The security for repayment of the bonds is not the actual level of utility avoided costs to be calculated on a periodic basis and paid to the bond holder. Instead, the security for the bond is the payments promised by the utility to the WAP agency through the contract entered into based on the EEIs installed through WAP appropriations. It is the utility's promised *contract payments* which have been securitized, in other words, not the avoided costs themselves.

3.1.1.2 Potential solutions

Even the *appearance* of a risk arising from falling avoided costs, whether or not that appearance is based in fact, can be addressed in several different fashions. First, the bonds can be of varying terms, backed by floating avoided costs. In this context, the term "floating avoided costs" is defined to mean simply that the avoided costs used to repay the bonds represent the actual avoided costs being experienced at any particular period of time. The level of avoided costs floats up or down in conformity with actual circumstances as determined at regular

intervals.[29]

In this situation, variable terms would provide investors with options on the amount of risk they wish to undertake. Terms of five, ten and fifteen years, for example, would seem to be reasonable. The interest rate for each term would then reflect the risk, *e.g.*, with the fifteen year bond perhaps being more risky (and thus providing a greater return) than the five year bond.[30]

Second, in the instance of longer term bonds, one could introduce mandatory call provisions that would become effective under predetermined circumstances. If, therefore, avoided costs fell by more than a predetermined amount, the bonds would be subject to "refinancing." While the bonds would need to be "paid off" using the level of avoided costs which exists at the time of the exercise of the call, the call provision would protect against even greater losses anticipated through a continuing reduction in avoided costs.

Third, there might be variable interest rates. If utility avoided costs varied by more than predetermined amounts, up or down, the interest rate on the bond would vary up or down as well. It is not uncommon for bonds to include provisions that provide for variable interest rates.[31] For example, debt may include a moratorium on the payment of principal or interest under specified conditions.

Fourth, the projected avoided costs could be levelized and fixed for the term of the bond. Under this approach, the utility would guarantee a level of EEI return, *i.e.*, warrant to the bondholder that the income stream supporting the bond will meet certain levels on a year-by-year basis. Again, however, the interest rate (and thus the overall return on investment) would reflect the reduced risk of a guaranteed stream of revenue in this case.[32]

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[29] For example, a recalculation of avoided costs could be accomplished on five year cycles.

[30] It is not clear, however, that longer terms mean higher risks. It may be that avoided costs are actually *more* variable in the short-term than in the long-term. Whether this is the case could be subject to empirical ascertainment.

[31] When such variation is tied to variability in profits, such debt is often referred to as "near equity."

[32] Even in this case, there would be the risk that the utility will default on its bond obligations. This risk would seem to be minimal. Bonds are repaid before any equity return is paid, for example. Thus for a default to be threatened, net income would need to be so little as to eliminate all equity returns and threaten long-term debt. The risk of default on a "guaranteed" avoided cost bond would thus equal the risk on all other utility bonds. Generally, however, utility defaults have historically been virtually non-existent, except in the presence of large scale nuclear debacles.

Finally, the WAP agency could accept something less than "full" avoided costs as the basis for bond repayment. Acceptance of this lesser figure would be undertaken with the *proviso* that if avoided costs fell, the "avoided costs" assumed for purposes of repaying the bond would nonetheless remain the same.\33\

Since it is axiomatic that nothing in finance is constant, it seems clear that, particularly over the long-term, it *must* be possible to quantify and address the risk of future variations in avoided cost values through existing financing mechanisms.\34\

3.1.2 Non-existent savings: utility objections

3.1.2.1 The risk

An additional risk to investors would be objections voiced by the utility to paying avoided costs if the projected savings underlying the securitized avoided costs did *not*, in fact, arise. Under such circumstances, the utility would be paying for savings that did not occur.

While perhaps, again, more of a political problem than a "real" one, there is nonetheless a need to affirmatively address the problem of non-existent savings. It is *not* likely that actual savings\35\ are more variable than factors which underlie other investments. Moreover, it seems likely that there will develop standard measures of variability and the like (*e.g.*, the *beta* of utility avoided costs) by which to measure any bond backed by a particular utility's avoided costs. Nonetheless, it is possible to take specific steps to address the perception of the risk associated with unrealized savings.

3.1.2.2 Potential solutions

\33\ Conversely, the WAP agency should receive additional compensation if the avoided costs increased since the additional bond financing made available to it was less than the full avoided costs would have merited in the first instance. It is no the *investor* who should receive a premium, since presumably the use of less than full avoided costs did not reduce the return to the investor but rather simply reduced the amount of private debt that was possible to be raised.

\34\ The truth of this statement is borne out, as well, by the fact that long-term contracts, based on utility avoided costs, are common for non-utility generators (NUGs) and qualifying facilities (QFs) under Section 210 of the federal Public Utility Regulatory Policies Act (PURPA) of 1978.

\35\ Remember, as discussed below, the savings variability is that variability which results in the average savings of the WAP program as a whole being less than that which is projected.

Several affirmative steps can be taken to protect investors against the risk of non-existent savings. First, the risk of the non-existent savings can be addressed through an identification of the types of measures eligible for financing through the securitized avoided cost bond. There are standard EEI measures, in other words, about which there is little controversy regarding the efficacy of savings. Even with less standard measures, the measures to be financed through any given bond issue would be required to be disclosed, discussed and justified in a "prospectus" as discussed above. In this fashion, given the sophistication of the investment process proposed --we're not talking about consumer loans made by bank officers here-- the calculation of savings and projected avoided costs could be quite sophisticated, thus minimizing risk.

Second, the risk of variability in savings can be addressed by requiring minimum sized investments in DSM measures. As with any other type of risk, in other words, the risk of savings variability can be minimized through diversification. While any *one* energy efficiency project might fail to meet savings projections, it is unlikely that the portfolio of projects taken together as a whole would fail to meet such projections. This type of risk avoidance can best be illustrated by a state WAP agency. Assume that a state WAP agency issues $4.5 million in securitized avoided cost bonds. At an average investment of $1,800 per household, the WAP agency would reach 2,500 homes with the proceeds of this bond. While some homes would save less and others would save more as a result of the energy efficiency measures, in the aggregate, a reasonably "risk free" average savings level could be developed and relied upon for purposes of calculating the avoided costs to be generated by the portfolio of units taken as a whole.

Finally, the risk of variability in savings could be addressed by basing the avoided cost compensation on some "base line" savings, rather than the average savings projected for the entire DSM investment. Under this approach, for example, savings from WAP investments might be projected to vary from 15 - 25 percent, with an average savings of 20 percent. Instead of basing avoided cost projections on the 20 percent average, the avoided cost projections could be based on the lower 15 percent. If savings, in fact, fell substantially short of those projected, therefore, investors would have some protection because they would not have relied upon the higher projections.[36]

3.1.3 Force majeure as a risk

The risk that a party might seek to abrogate contract obligations based on economic circumstances beyond the party's control is not non-existent. Note, for example, the move in recent years to abrogate natural gas take-or-pay contracts due to variable gas costs. Note, also,

[36] If savings are greater, however, by more than some designated amount, the WAP agency should be compensated for agreeing to the base line approach in the first place, which provided a lesser stream of utility contract revenues as a basis for bond-supported private financing.

the abrogation of uranium contracts because of significant price changes. The economic non-viability of a contract obligation to repay avoided cost bonds could lead to efforts to abrogate the contract based on *force majeure* considerations.

3.2 SECURITY FOR THE INVESTORS

One aspect of any development of a new bonding mechanism through which to generate private investment for WAP agencies must be the creation of some type of "guarantee" pool to protect against the investor risks identified above. At a minimum, this "guarantee" pool might make unnecessary some of the efforts discussed immediately above to minimize differing risks associated with energy efficiency investments.

Before discussing how to secure against risks to the investor, it should be noted again, however, that no such security should be necessary. The basis for repayment of the bonds is the contract payments made by the utility to the WAP agency. The repayment is *not* directly dependent on either the level of savings generated by WAP investments or the utility's avoided costs implicit in the contract.

Nonetheless, in an effort to make the investment as secure as possible, security for the investors is discussed below.

3.2.1 Self-insurance pool

The creation of a self-insurance pool would be the best means evident today of guaranteeing an investment in energy efficiency against many of the risks identified above. A self-insurance pool might, for example, be used to insulate against the risks that avoided costs would decrease or that savings would not rise to the level projected in support of the project.

A self-insurance pool could be capitalized in a variety of different ways building on the suggestions above. First, an agreement could be reached that the full avoided costs of the utility would not be devoted to repayment of the bond issuance. Instead, some portion of the avoided costs would be used to capitalize a self-insurance pool by the WAP agency. Assuming that a WAP agency's investment in EEIs would generate levelized utility avoided costs of 4.5 cents per kWh, in other words, 4.0 cents could be used as the basis for repaying a bond issuance with the remaining 0.5 cents used to capitalize an insurance pool.

Second, in a similar fashion, a self-insurance pool could be capitalized through the an agreement to reserve the avoided cost payments for some portion of the savings generated by the WAP investments as a means to capitalize a self-insurance pool. Assuming that a WAP agency's investment in EEIs would generate average savings of 300 therms per household per year, the avoided costs for 250 therms would be used as the basis for an additional bond issuance, with the avoided costs for the remaining 50 therms being used to capitalize an insurance pool.

3.2.2 Foundation insurance and guarantees

Foundation dollars would *not* represent a good source of capitalization for an insurance and guarantee fund. While foundation dollars might be sufficient to fund a guarantee for a limited pilot project, it is unlikely that foundation dollars would be sufficient to guarantee the substantial private investment which this proposal seeks to generate on a nationwide basis. It is better, therefore, to develop the replicable sources of guarantee funds from the beginning than it is to rely upon a short-term influx of foundation dollars that may not be available on a long-term, or nationwide, basis.

PART FOUR: ADVANTAGES OF AN AVOIDED COST BOND.

4.1 ADVANTAGES OF THE SECURITIZED EEI AVOIDED COST

The advantages discussed below are in no particular order of importance. Some assume the expansion of a securitized avoided cost bond beyond WAP agencies to other institutions providing large-scale energy efficiency investments.

I. Proper Investor Role: The securitized avoided cost would allow the investor to play its proper role in EEI endeavors: the provider of capital. The investor would *not* be involved with delivering the EEI, with evaluating the EEI, or in any other aspect of the EEI transaction. Instead, the investor provides the dollars through the purchase of a bond and receives a return of and on investment. The actual design and delivery of the EEI is left with the WAP agency, which holds the expertise in program design and delivery.

2. <u>Proper Role for Consumer</u>: The securitized avoided cost would allow the WAP agency its proper role as well. The use of such bonds will allow the customer to decide how much of its own money to invest in the energy efficiency improvement. The WAP agency will decide the level of risk it wishes to undertake.

In some circumstances, in other words, the utility's avoided cost may well cover the entire cost of the EEI.[37] In this case, even though the only contribution made to the EEI investment is through the utility's avoided costs, and even though the WAP agency is making a $0 contribution, everyone is still better off: the WAP agency has the energy and bill savings for low-income households; the utility has its avoided costs; and the investor has its profitable investment.

In other circumstances, the securitized avoided cost may *not* cover the entire cost of the EEI. An additional contribution will be necessary. In this case, additional federal dollars may be necessary to make the EEI available. Whether that happens, of course, is for the WAP agency, not the investor, to decide.[38] In *any* situation, it is the WAP agency who will decide whether, and if so how, to supplement the securitized avoided cost bonds to make a particular level of EEI "work" for that particular agency.

3. <u>Leveraging Private Investment Capital</u>: A securitized avoided cost bond would allow private investment dollars to enter into the process of financing energy efficiency improvements. WAP could issue securitized avoided cost bonds to bring private investment dollars into the energy efficiency market.

4. <u>Introducing the Market to EEI Decisions</u>: Through a securitized avoided cost bond, the market will decide how much EEI should be pursued. Private investors will decide, in part, based upon the return they can obtain on a securitized avoided cost bond, whether they prefer to invest their funds in energy efficiency, or in widgets, or in some other productive enterprise. If no buyers exist for the bonds, no EEI will be pursued.

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[37] *See*, discussion at pages 7, *supra*.

[38] If ultimately expanded beyond WAP applications, a PHA may, for example, issue securitized avoided cost bonds and then supplement that revenue with private financing to be repaid through reductions in the utility bill and the dollars provided through the new HUD shared savings regulations. In contrast, government funds might be used to supplement investment capital provided through a securitized avoided cost. Moreover, mortgage payments could be used to supplement the securitized avoided cost bond. This could be done either by non-profit developers or by for-profit developers.

While the level of EEI investment will be defined and limited by the interest of investors, it is not investors who are making decisions as to the *cost-effectiveness* of the EEI. Instead, investors are making investment decisions: do they prefer to invest in EEIs given the potential risk and return or do they prefer to invest in widgets given the potential risk and return.

5. Eliminate transaction costs: The transaction costs associated with the delivery of the energy efficiency improvement would be eliminated for both the investor and the utility. It is neither the investor nor the utility which is delivering the energy efficiency improvement. Rather, these two parties are playing their appropriate role: the financier.

This is not to say that no transaction costs exist for delivering the EEI. Rather, the transaction costs of delivering the energy efficiency, itself, simply falls on the WAP agency seeking the financing. And it is up to *that* WAP agency, not the financier, to determine whether the transaction costs of delivering the EEI makes the improvements *not* cost-effective from that agency's perspective. If the transaction is not cost-effective, no financing will be sought.

6. Allows Residential "Packaging" and Servicing: A securitized avoided cost bond would create a mechanism for reaching the hardest market that has yet been identified: the existing single family detached home market. The proposed mechanism, in other words, would bring debt financing to single family detached homes in general, and to low-income single family detached homes in particular. Rather than making individual loans to thousands of low-income households, in tiny transactions with high transaction costs, debt is provided "in bulk" to the WAP agency which then uses the debt financing to install low-income energy efficiency measures.

Through such a situation, the problem of high transaction costs is addressed in at least three ways. First, since the bonds are issued for particular WAP-provided EEIs in the first place, there would be no need for an "audit" of the home at fully-embedded costs. Instead, the WAP agency would likely experience only the incremental costs of doing the work necessary to provide the additional EEIs financed by the securitized avoided costs.[39] Second, since the bonds are backed by utility avoided costs, not by payments from the property owner, there would be no reason for a credit check associated with each transaction. There really is no "credit" extended to the property owner. Finally, since the bonds are backed by the utility's avoided costs, not by property owner payments, the process of credit and collection for individual small loans is avoided.

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[39] Two alternative scenarios are possible. On the one hand, there could, in fact, be a full set of auditing expenses, if the WAP agency does not do additional measures in the homes in which it already is auditing, but instead decides to audit and weatherize additional homes. On the other hand, there could be no additional auditing expenses, if the WAP agency's existing audits identify cost-effective measures the cost of which exceeds the amount of per unit dollars it has available through the WAP program.

7. <u>Permit Multiple Fuel Improvements</u>: The securitized avoided costs would permit parties to mix bond issues from different utilities in order to deliver comprehensive conservation services. If the state WAP program, in other words, was going to deliver both electric and natural gas EEIs to households, it would be able to generate a total pot of dollars from two different bond issues backed by the respective avoided costs of the natural gas and electric utilities. Indeed, through such a financing vehicle, agencies (or private entities) delivering conservation services could finally centralize comprehensive services, with only the financing being the involvement of the respective utilities.

Moreover, EEIs might generate multiple fuel savings to the consumer even without contributions from all the various utilities. Insulation might reduce natural gas heating costs, in other words, while at the same time reducing summer electric air conditioning costs as well. Moreover, reducing the use of a forced air natural gas furnace reduces the electric consumption associated with furnace fan use.

8. <u>Create Market Incentives for EEI Efficiency</u>: On both an EEI provider level, and on an industry level,[\40\] generating private financing through a securitized avoided cost would create a market incentive to pursue all reasonable efficiencies in the delivery of EEIs. To the extent that the costs of delivering the EEIs could be reduced down toward the costs financed through the bond, the required non-avoided cost contribution from the provider would be reduced.

Assume, for example, that the EEI provider is the state WAP agency discussed in Illustration 2 above.[\41\] In this example, the WAP agency gains a utility avoided cost contribution of $1,093 toward an EEI costing $1,800. The difference in cost must be generated through an additional non-utility stream of revenue. Every dollar of greater efficiency that can be wrung out of the EEI delivery process, therefore, with the concomitant dollar of reduced expense from the $1,800, thus represents a dollar that need not be paid by someone else. There is an incentive on the part of the WAP agency to generate as much efficiency, and thus cost reduction, as possible.

It is, of course, possible that because of this incentive, some "cream skimming" would occur. "Cream skimming" is where the WAP agency pursues only the most cost-effective EEIs, thus leaving those improvements with longer paybacks undone. But such cream skimming would seem unlikely in a major government program such as WAP. In any event, the decision as to an appropriate level of energy efficiency investment should be left to individual WAP agencies.

\40\ The "industry" is the industry delivering energy efficiency improvements, not the utility industry.

\41\ *See*, Illustration 2, page 8, *supra*.

9. Minimum Standards: Creation of a securitized avoided cost bond would facilitate (although not require) the development of minimum standards of energy efficiency. Securitized avoided cost bond revenues might not be available for investments in "energy efficiency" less than these minimum standards. Such standards might state, for example, that bonds could only be issued if residential insulation is upgraded to at least R19. Federal standards exist, for example, that might be adopted by reference for all EEIs undertaken using this type of bond. To the extent that a secondary market is created for these bonds, this market, too, the players in that secondary market might well play their traditional role of setting minimum standards as a precondition of the resale of the bonds.

10. Consumer Mix and Match: The different bond types and terms discussed above would expand available choices in the availability of EEI financing. A WAP agency may choose, in other words, to finance an EEI over 15 years, even though the interest rate will be higher to reflect the higher risk inherent in the bond. In contrast, the WAP agency may reasonably choose to finance the EEI over only five years, in order to take the lower interest rate. Consumers might choose between variable and fixed rate avoided cost bonds, with the choice being driven again by the risk in the bond and thus the cost of the return. Through a securitized avoided cost bond, however, it would be possible to offer such choices.

11. EEI Bond Banking: Creation of a securitized avoided cost bond would allow joint ventures on the part of parties seeking to deliver energy efficiency improvements to residential households. A specialized bond, for example, would permit the pursuit of "bond banking" by interested parties.

One common endeavor today by small municipalities is to engage in municipal bond banking.\42\ Through such efforts, small municipalities are able to pool their financial needs into a single bond transaction. In such a fashion, the cost of capital is decreased and transactions costs are brought into a reasonable range. No reason is readily evident why such "bond banking" would not also be available to permit various parties to merge their efforts for purposes of raising capital. Indeed, to create a bond so as to permit such banking would be one major step forward in efforts to address the problems associated with the transactions costs of generating the appropriate level of financial backing for residential conservation.

12. Facilitate Shared Savings Transactions: The proposed avoided cost bond will assist shared savings companies in marketing

\42\ Feldman, "The Optimal Bond Bank," 9 ***Harvard J. of Law & Public Policy*** 699 (1991).

their services. These bonds will provide a ready source of capital upon which to build a project. Indeed, rather than generating a cash flow sufficient to retire the *entire* cost of the EEI investment, the savings would need only cover the incremental costs *not* covered by the avoided costs. This would allow shared savings companies to leave a greater portion of the bill reductions with their clients, thus increasing cash flows and the commercial marketability of their projects. It would seem that shared savings companies would be involved with transactions large enough to enter this bond market, particularly if they are directed toward multi-family dwellings, PHAs and the like. Shared savings companies should be large users of the proposed bonds.\43\

14. <u>Extended Utility Financing of DSM</u>: The proposed avoided cost bond will cushion the cost to utilities of their financing of energy efficiency improvements. Rather than financing the cost of EEIs up-front, with repayment of that financing coming over an extended period of time through the utility's avoided cost, the utility would allow the institution *delivering* the EEI to finance the energy efficiency in the private capital market. The obligation to the utility would then simply be to provide the payment of the annual avoided costs. In other words, instead of *the utility* issuing $15.0 million in bonds, and then repaying that *utility* debt through avoided costs, the state WAP agency would issue the bonds, with the utility having only an obligation to pay its annual avoided costs as its contribution to bond retirement. The cost of the financing, as well as the risk of the financing venture, would be transferred to the private capital markets.

\43\ This assumes that the concept suggested in this paper for WAP agencies is ultimately extended to other major providers of low-income energy efficiency measures.

PART FIVE: SUMMARY AND CONCLUSIONS.

5.1 SUMMARY

The pursuit of third party investment in residential energy efficiency improvements (EEIs) should look not to the transaction of determining and installing appropriate EEIs. Nor, should efforts at developing a financing product look to specific parties to whom to lend. Rather, the effort to advance private investment in residential energy efficiency should concentrate on developing an appropriate financial instrument that can be bought and sold on the market. That product, a "bond," could then be issued by whomever might be interested in raising substantial sums of money for energy efficiency improvements. The institutions that come most readily to mind are state WAP agencies.

The proposal above posits that just as many other financial assets are being "securitized" today, it should be possible to develop a securitized avoided cost bond. This financial instrument would be a bond backed by the stream of dollars representing a utility's contract to pay the state WAP agency an amount equal to the avoided costs generated by energy efficiency improvements installed at WAP expense. The fact that the energy efficiency improvements are installed at WAP expense, rather than utility expense, does not affect whether those improvements generate avoided costs for the company.

The idea of a securitized avoided cost bond to be used to expand WAP dollars is worth pursuing.

ATTACHMENT A: UTILITY AVOIDED COST FROM $1.0 MILLION WAP INVESTMENT											
	A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**
YEAR	**TOTAL WAP INVESTMENT**	**WAP PER UNIT INVESTMENT**	**UNITS TREATED (A / B)**	**USE/UNIT (THERMS)**	**PCT WAP SAVINGS**	**THERM SAVINGS (D x E)**	**ADD LOSS FACTOR (F x 1.03)**	**GAS COST**	**AVOIDED COST/UNIT (G x H)**	**TOT NOMINAL AVOIDED COST (C x I)**	**PRESENT VALUE AVOIDED COST (4% DISCOUNT)**
1	$1,000,000	$1800	556	1000	20%	200	206	$0.62	$128.16	$71,260	$1,263,654
2				1000	20%	200	206	$0.67	$137.14	$76,248	
3				1000	20%	200	206	$0.71	$146.74	$81,585	
4				1000	20%	200	206	$0.76	$157.01	$87,296	
5				1000	20%	200	206	$0.82	$168.00	$93,407	
6				1000	20%	200	206	$0.87	$179.76	$99.945	
7				1000	20%	200	206	$0.93	$192.34	$106,942	
8				1000	20%	200	206	$1.00	$205.80	$114,428	
9				1000	20%	200	206	$1.07	$220.21	$122,437	
10				1000	20%	200	206	$1.14	$235.63	$131,008	
11				1000	20%	200	206	$1.22	$252.12	$140,179	
12				1000	20%	200	206	$1.31	$269.77	$149,991	
13				1000	20%	200	206	$1.40	$288.65	$160,491	
14				1000	20%	200	206	$1.50	$308.86	$171,725	
15				1000	20%	200	206	$1.60	$330.48	$183,746	