

REPORT ON
FORMATION OF A
GREEN RETROFIT PROGRAM

Presented to the Honorable Phil Hardberger, Mayor
And
The City of San Antonio

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Economic Innovation International
Strategic Development Solutions
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REPORT ON FORMATION OF A GREEN RETROFIT PROGRAM

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REPORT ON FORMATION OF A GREEN RETROFIT PROGRAM

OVERVIEW

This report discusses two models for undertaking green retrofits in San Antonio:

- The Pay As You Save[®] (PAYS[®]), a market based system for purchasing cost-effective resource efficiency and renewable energy measures with no up-front payment, no debt, and payment attached to customers' utility bills.
- The Houston free weatherization program.

The report goes on to propose a Green Retrofit Program pilot, utilizing the PAYS[®] system, to retrofit City and commercial buildings and multi-family and single family residences.

The report concludes with three appendices:

- A description of the consultants involved in this report.
- A discussion of how the PAYS[®] system can be utilized to create a full Green Retrofit Program in San Antonio.
- A plan for creating a tax exempt bonding capability for funding the retrofits undertaken by a San Antonio Green Retrofit Program.

GREEN RETROFITS

To address the need for green retrofits in San Antonio's relatively old building stock, the City of San Antonio contracted with Sustainable Systems, Strategic Development Solutions, and Economic Innovation International (Retrofit Consultation Team) to develop a recommendation for how to finance a substantial number of green retrofits (such as installation of energy efficient appliances, insulation, weather-stripping, double pane windows, solar hot water etc.) in low- and moderate-income (LMI) residences, and government, institutional, and commercial buildings.

In order to make such a recommendation, a business model and an organizational structure for accomplishing the green retrofits needed to be identified and accessed.

The information below details two different approaches to accomplishing green retrofits, one more appropriate for government, institutional, and commercial buildings and the other more appropriate for low- and moderate-income (LMI) residences.

GREEN RETROFIT MODELS

PAYS[®] System

Early in the period covered by this contract, the Environmental Defense Fund (EDF) approached the City of San Antonio to suggest the possibility of providing a \$25,000 grant

to assess the feasibility of the Pay As You Save[®] (PAYS[®]) platform, developed by Energy Efficiency Institute, as a business model for retrofits in San Antonio.

The City of San Antonio came to an agreement with the Environmental Defense Fund whereby EDF provided the funding through a contract with Sustainable Systems, who would in turn sub-contract with Energy Efficiency Institute to conduct an assessment of the feasibility of using the PAYS[®] system in San Antonio for green retrofits. Sustainable Systems agreed to include the results of this assessment in the report called for by the City's contract with the Retrofit Consultation Team.

PAYS[®] is an innovative market-based system that provides an opportunity to buy and install cost-effective resource efficiency and renewable energy measures with no up-front payment. Using the PAYS[®] system enables institutional, commercial, industrial, and moderate to higher income residential utility customers to purchase all cost-effective resource efficiency and renewable energy measures to save electricity, other energy resources, and water for their facilities, buildings, and homes. The PAYS[®] system has the following features:

1. Participants pay project costs for the measures installed in their buildings through a fixed, monthly, tariffed PAYS[®] charge on their utility bill for a specified term, but no longer than the useful life of the measures.
2. The annual PAYS[®] charges will be less than the estimated annual savings from the installation, giving the customer an immediate cash flow improvement.
3. If a customer vacates, the next customer at the location reaps the savings and pays the energy bill with the PAYS[®] charge.
4. Available incentives that can lower upfront costs, such as rebates from manufacturers and utilities (up to the amount required to qualify measures for this program) will be used to lower project costs and qualify more measures.
5. Cost effectiveness calculations determine the financial viability of measure installation for the customer based on the customer's utility retail rates, considering all project costs not covered by other funds.
6. The program is available to both owners and renters.

Energy Efficiency Institute made a site visit to San Antonio and met with City of San Antonio staff and representatives of CPS Energy, San Antonio Water System (SAWS), and a number of retrofit and weatherization contractors and solar installers.

In the discussions with CPS Energy, CPS Energy agreed that it would be possible to establish a green retrofit surcharge on CPS Energy bills (analogous to the way CPS Energy includes garbage collection fees for the City of San Antonio on CPS Energy bills) to pay for retrofit measures that are installed using the PAYS[®] system. CPS Energy also agreed that the surcharge could "go with the meter," allowing retrofit measures to be installed without building owners or tenants incurring any new debt.

Based on its site visit and on extensive discussions with Sustainable Systems, Energy Efficiency Institute prepared a concept paper describing one approach for how a full PAYS[®] system could be established in San Antonio. (See Appendix A.)

Based on the PAYS[®] system described in the Energy Efficiency Institute concept paper, the Retrofit Consultation Team prepared a set of recommendations for financing the Green Retrofit Program based on the use of tax-exempt revenue bonds. (See Appendix B.)

According to Energy Efficiency Institute, the PAYS[®] system works very well for government, institutional and commercial buildings and homes owned by higher net worth individuals. It is less effective and requires subsidization to be used in relation to LMI owner occupied and rental housing. For this reason, Houston's free weatherization program was explored as another model for accomplishing green retrofits.

Free Weatherization

Houston's Residential Energy Efficiency Program provides free weatherization services in targeted LMI neighborhoods where at least half of the neighborhood is below 200% of the federal poverty level.

The City of Houston sends letters to every home in the targeted neighborhood asking if they want free energy efficiency work done. The city gets in touch with civic leaders to help encourage acceptance of the program. Then the city sends contracted energy efficiency crews to the LMI neighborhood, the crews complete an energy audit on every household where the resident(s) agreed, and then the crews perform up to \$1,000 (including contractor costs and energy audit costs) worth of repairs on each household – installing attic insulation and weather-stripping, caulking air leaks, putting in compact fluorescents, and sealing up duct leaks.

If the household is below 125% of the federal poverty level, they spend up to \$4,000 more, replacing appliances, repairing or replacing HVAC systems, among other measures. The funding for the program comes mostly from Centerpoint Energy, the primary Houston energy utility, so there is no cost to the residents. The program runs with 1 program manager, 1 assistant, and a team of 2 contracted workers that coordinate what goes on in the field.

The Houston Energy Efficiency Program has retrofitted 5,100 homes and has plans to do 5,000 more in 2009. They get up to 50% participation in each neighborhood. Energy bills are reduced by 12% most of the year and up to 20% during the summer. It takes about 2 hours per house and they can retrofit up to 400 houses per month. Unlike the PAYS[®] system, the Houston approach doesn't allow for any cost recovery and does not work for institutional or commercial buildings.

In order to address both types of clientele for green retrofits, the PAYS[®] system and the free weatherization system both seem to be necessary.

GREEN RETROFIT PROGRAM

It is the recommendation of the Retrofit Consultation Team that retrofits in San Antonio be addressed using both Houston's free weatherization model and the PAYS[®] system. A free

weatherization system based on the Houston Energy Efficiency Program can be used for LMI owner occupied and rental housing. A Green Retrofit Program using the PAYS[®] system can be used for government, institutional, and commercial buildings and homes owned by higher net worth individuals.

The establishment of a free weatherization program, based on the Houston Energy Efficiency Program, will involve discussions and an agreement between CPS Energy and the City of San Antonio. It is beyond the scope of this contract for the Retrofit Consultation Team to make any further recommendations in relation to the organization of the free weatherization program, the establishment of a pilot, or the selection of one or two neighborhoods for a pilot program.

In relation to the Green Retrofit Program, using the PAYS[®] system, the Retrofit Consultation Team proposes that the City of San Antonio undertake a pilot Green Retrofit Program to test the economic benefits, program mechanics, contractor capabilities and financial mechanisms involved in the use of the PAYS[®] system.

Pilot Program

The Retrofit Consultation Team suggests that a Green Retrofit Program pilot in San Antonio should address the various types of buildings for which the PAYS[®] system could be utilized, including government buildings, commercial buildings, at least on multi-family rental housing building, and individual residences. These buildings would be retrofitted with installation of a pre-determined set of resource efficiency and renewable energy measures by a to-be-determined high quality master contractor.

The Retrofit Consultation Team proposes that the elements of the Green Retrofit pilot would include:

- Acquiring of the PAYS[®] system of contracts, forms, spreadsheets, etc. to be used in the San Antonio pilot.
- Negotiating with CPS Energy to establish an agreement for CPS Energy to place a surcharge on the CPS Energy bills to repay the cost for installing energy efficiency measures undertaken through the Green Retrofit Program pilot, utilizing the PAYS[®] system, and collaborating in the development of the surcharge system.
- Design of the pilot, including program components and evaluation criteria, to ensure that the pilot is as replicable as possible as a full scale program, including structuring of the ownership of measures to facilitate possible capture of tax advantages.
- Identifying the buildings that will be included in the pilot, including City buildings, commercial buildings, at least one multi-family housing building, and single family homes.
- Performing detailed audits and work plans for buildings selected for retrofits before retrofits are implemented.
- Preparing a Request for Proposals (RFP) for a Master Contractor to handle the retrofits in the pilot, including: development of the RFP; enrolling potential bidders; coordinating of the selection process, and selecting of the master contractor.

- Joining with the selected Master Contractor to establish a system for measuring resource and money saving results once the retrofits are complete.
- Evaluating the success of the pilot according to pre-established evaluation criteria.
- Determining whether it is appropriate to establish a full scale Green Retrofit Program as a free-standing not-for-profit corporation and make a recommendation to the City as to whether to move forward with the full scale Green Retrofit Program.
- Producing a complete design for the full scale Green Retrofit Program organization and bonding capability as discussed in Appendices A and Appendix B of this report.

Financing the Pilot

The Retrofit Consultation Team has explored the use of federal Qualified Energy Conservation Bonds and/or Clean Renewable Energy Bonds for the start-up funding for the Green Retrofit Program pilot. In direct communications with the federal officials responsible for these bonds at Treasury and the IRS, the Retrofit Consultation Team was told that guidelines for eligible expenditures and uses for these bonds have not been set yet and that they will likely be set at the time funding is allocated to local governments. The timelines for establishing regulations and allocations have not been set yet, but it is expected to be soon due to the priorities of the Obama administration.

The federal officials at Treasury/IRS indicated that they were very open and willing to be in communication with local governments to review local programs in order to obtain a better sense of local programs that could use these bonds and to receive assistance in establishing guidelines. This is clearly an opportunity to assist Treasury/IRS in establishing guidelines for these bonds by using both the proposed Pilot and an expanded, fully implemented program as a basis for federal action.

Appendix A: Consultants

The City of San Antonio contracted with Sustainable Systems as the lead consultant to explore establishment of a Green Retrofit Program in San Antonio. Sustainable Systems, in turn, subcontracted with financing experts, Economic Innovation International and Strategic Development Solutions. Using a separate allocation of funding from the Environmental Defense Fund, Sustainable Systems also sub-contracted with the developers of the PAYS[®] system, Energy Efficiency Institute.

Sustainable Systems specializes in business, finance, and economic development from a sustainability orientation. Sustainable Systems serves as the lead consultant to the Bay Area Council for the \$240 million Bay Area Family of Funds and as the developer and manager of the Communications Technology Cluster, a Business Acceleration Center in Oakland California. Economic Innovation International has a thirty-eight year history of building special purpose investment funds of many different types, including successful working models for financing this Green Retrofit Program, with more than \$100 billion in assets in funds that have been built. Strategic Development Solutions is the Lead Consultant for the \$750 million Genesis L.A. Family of Funds and has partnered with Economic Innovation International to build \$2 billion of existing (and soon to exist) funds in many different regions in the U.S.

The three groups have co-authored *The Double Bottom Line Handbook: A Practitioner's Guide to Double Bottom Line Investment Initiatives and Funds*, which the Ford Foundation supported as the first comprehensive discussion of the growing \$20 billion national private equity fund industry utilizing double bottom line criteria (a market rate of financial return as the first bottom line and significant economic, social, and environmental returns as the second bottom line).

Energy Efficiency Institute has more than thirty years of field-based program design, implementation, and evaluation experience, providing on-site efficiency analysis and project oversight for hundreds of homes, small and large commercial facilities, schools, hospitals and colleges. Energy Efficiency Institute developed PAYS[®], as a market-driven system designed to stimulate consumer purchase of resource-efficiency measures for buildings. (See Appendix B, for a more extensive discussion of Energy Efficiency Institute.)

Green Retrofit Program Concept

Prepared for
Sustainable Systems, Inc.

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By
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Green Retrofit Program Concept

A. Summary

The Green Retrofit Program is one component of San Antonio's Sustainability Initiative. It will coordinate with all other aspects of San Antonio's Sustainability Initiative especially the Green Jobs and Green Education programs. The Green Retrofit Program uses the Pay As You Save[®] (PAYS[®])¹ platform, an innovative market-based system to provide most utility customers in the City of San Antonio (City) with the opportunity to buy and install cost-effective resource efficiency and renewable energy measures in their homes, businesses, and public buildings with no up-front payment, no new debt obligation, the assurance that their utility costs will be lower, and the guarantee that each customer will make monthly payments only for as long as the customer remains at that location and the measure(s) continue to work.

By overcoming the market barriers that have inhibited customer purchase of energy efficiency measures, the Green Retrofit Program will establish a more robust market for resource efficiency and renewables in the City, providing energy savings, water savings, electric demand reduction, employment opportunities, greenhouse gas emission reductions, increased disposable income, improved property values, and demonstration of a model that can be replicated across the country. The program will:

- Establish a tariff that utility customers in the City can use to purchase and install money-saving, resource efficiency and renewable measures. Customers at the location where the measures were installed will pay for them through a PAYS[®] charge on their electric bills for a specified term. If a customer leaves the premises, responsibility for remaining payments will transfer to successor occupants. Both owners and renters will be eligible.
- Facilitate a \$14.24 million investment in energy and water efficiency improvements San Antonio buildings over the first 15 months of program implementation. This level of activity will be ramped up until half of the building stock in the city can be treated.
- Establish a city agency, city-owned entity, or independent nonprofit Green Retrofit Intermediary with trained staff able to assist City customers through the challenges of purchasing efficiency measures while promoting quality and appropriate contractor work.

¹ The PAYS[®] platform was developed by the Energy Efficiency Institute (EEI, see Appendix B) in 1999. In 2001, two New Hampshire utilities became the first to implement PAYS[®], one utility offering it to municipal and school customers, the other to residential and small commercial customers. In 2007, three Hawaiian Electric Industries' utilities implemented programs using PAYS[®] to facilitate installation of solar water heaters. A Kansas cooperative utility started a program in 2008 using all but one of the PAYS[®] key elements to promote installation of efficiency measures in residential rental units.

- Complement existing programs, including Build San Antonio Green, Alamo Area Council of Governments' low income Weatherization Assistance Program, and San Antonio Water System's (SAWS) conservation programs.
- Coordinate with the new Green Jobs program to create approximately 40 job-years with good wages and benefits, including opportunities for health care and career advancement, for every 2,000 retrofits completed with a value of \$9.8 million.
- Harness the resources of the Residential Energy Education program to ensure City residents realize all the benefits of their Green Retrofit improved homes.
- Take advantage of markets for carbon, forward capacity, efficiency, and other environmental attributes.

B. Program Vision

The City and CPS Energy will use the PAYS[®] platform to establish the Green Retrofit Program and provide the resources in San Antonio that will eventually allow most residential, commercial, industrial, and institutional customers in the city to purchase all cost-effective resource efficiency and renewable measures for their homes, buildings, and facilities that save electricity, other energy resources, and water as follows:

1. Participants will pay project costs for the measures installed in their buildings through a fixed, monthly, tariffed PAYS[®] charge on their CPS Energy bills for a specified term, but no longer than the useful life of the measures.
2. The annual PAYS[®] charges will be significantly less than the estimated annual savings from the installation, giving participants immediate cash flow improvement.²
3. If a customer vacates, the next customer at the location reaps the savings and pays the energy bill with the PAYS[®] charge.
4. Available incentives that can lower upfront costs, such as rebates from manufacturers and CPS Energy Rebates (up to the amount required to qualify measures for this program) will be used to lower project costs and qualify more measures.
5. Cost effectiveness calculations will determine the financial viability of measure installation for the customer based on the customer's utility retail rates, considering all project costs not covered by other funds and excluding any escalators.
6. The program will be available to both owners and renters.

Buying measures as part of the Green Retrofit Program assures customers that:

- there is no upfront payment for cost effective resource-saving measures³;

² However, since measures may save resources other than electricity, for a few customers, the monthly charge may exceed their electricity bill savings. In such cases, savings on gas or water bills will more than offset this increase.

³ Except that customers with greater financial resources may choose to make an upfront payment to include additional measures for which they may receive tax or carbon credits or other benefits.

- estimated annual savings will be independently certified to significantly exceed annual payments and recommended measures will be verified as appropriate;
- no debt will be reported to banks, credit agencies, or the IRS;
- no lien will hinder sale of the property;
- payment obligations will be suspended if a measure fails and is not repaired (suspension will begin three weeks after customer report of failure); and
- a customer's payment obligation will stop if the customer moves from the location.

The Green Retrofit Intermediary (GRI), which will be either a City Agency, an entity owned by the City, or an independent non-profit, will be the gatekeeper to all PAYS[®] activity. The GRI will qualify proposed projects for the program, verify savings estimates and appropriateness of measures for installation, oversee the work certified contractors on behalf of customers, and provide consumer assurance. The GRI will be the primary contact with customers, contractors, and the City regarding all aspects of the Green Retrofit Program.

The Green Retrofit charge will be in effect for a location until all costs associated with installed measures have been recovered. Costs include installation costs, interest, program fees (if any), and, if appropriate, any missed payments, repair costs, or pre-paid operations and maintenance costs. Green Retrofit charges will be itemized on the participants' electric bills and treated the same as all other distribution utility charges, including disconnection for non-payment in accordance with existing CPS Energy protocols. For the Introductory and Pilot phases of the program, the maximum payment term will be ten years. However, if solar hot water heating (SWH) systems are eligible measures, the payment term will be extended to twelve years.

Contractors can package measures to enable savings from more cost-effective measures to help qualify measures with longer paybacks. Additionally, customers may also offer to pay contractors an upfront payment equal to the amount required to qualify less cost-effective, resource efficiency measures for the PAYS[®] tariff. This will allow customers with means to take advantage of mail-in rebates and tax credits, or to purchase measures with desirable non-resource-saving benefits. These customers will be able to use the PAYS[®] tariff to pay for that portion of the project cost that is sure to be recovered through savings, but not for any balance of a project's costs. In other words, for any customer payments for the portion of the project cost that is not cost effective, whether paid in cash or borrowed, the occupant or building owner will not get the benefits of PAYS[®] including being able to pay it over time, having no new debt obligation, and having assurances that payments are only required as long as the customer remains at the location and the installed measures continue to work.

The term of the PAYS[®] charges may be extended to recover missed payments or costs to repair measures at a location, keeping program costs as low as possible and assuring participants that annual costs do not increase if measures fail and require repairs. The GRI will effect repairs when customers report measure failure, providing that in the GRI's assessment any repair costs can be recovered during the useful life of the measure by extending the payment term. If the GRI determines that the repair costs are too high or

the measure may not last long enough to recover repair costs, the GRI will notify CPS Energy to permanently stop charging customers at the location for the measures. If the measure is repaired, the customer will pay nothing up front. If the customer or their landlord caused a measure to failure, they would be responsible for any repair costs and for the balance of the PAYS[®] charges.

To ensure the success of the Green Retrofit Program, in its initial phases, a conservative measure screen will be employed (to ensure participants realize savings) and only measures and practices approved by Texas A&M's Energy Systems Lab (ESL) will be permitted.

C. Program Scope and Duration

The Green Retrofit Program will roll out in three phases in order to build program expertise, community support, customer awareness, and contractor capabilities. Assuming, a January 1, 2009 start date and completion of a comprehensive program design that is acceptable to the City and CPS Energy within two months, the program will roll out as follows:

Introductory Phase (1-3 months starting April 1, 2009)

During the Introductory phase, the program expects to retrofit approximately 50 selected single family homes of community leaders, green advocates, and policy makers; one multi-family complex of at least 100 units; one City building with up to \$220,000 in efficiency and renewable measures; and one large commercial and industrial (C&I) building with a solar project (providing CPS Energy determines using SWH systems to displace gas energy is appropriate).

Pilot Phase (1 – 2 years starting June 1, 2009)

Each year during the Pilot phase, the program will serve approximately 1,000 single-family homes, 1,000 multi-family units, City and other public buildings with \$1,100,000 in efficiency and renewable measures, and SWH projects deemed appropriate by CPS Energy. The City will end the Pilot phase when it has sufficient confidence in the PAYS[®] infrastructure and the measures being installed to warrant expansion to the full-fledged Green Retrofit Program.

Green Retrofit Program (8+ years)

As the GRI, the City, and the Green Jobs program identify markets and employment needs during the Pilot phase, it is likely that program capabilities can be at least doubled every two years. By year 8, that would mean that at a minimum, a well-trained workforce could expect to provide Green Retrofit services to at least 10,000 single family homes per year and 10,000 multi-family units, and arrange installation of millions of dollars of cost effective renewable and efficiency measures at City, hospital, school, and university buildings as well as large SWH projects for C&I customers. Most of the costs for all these measures will be paid out of a portion of their savings by those who benefit.

The Green Retrofit Program will be the first PAYS[®] program in Texas. Every aspect of the program will need to be spelled out to facilitate a successful effort by ensuring that

key policy decisions are made by those who understand the program vision, not by field staff in the middle of implementation and crises. During the two-month design phase, actual program size will be determined, capital will be developed, and the GRI will be selected.

To a large extent, the scope and duration of the Green Retrofit Program will be determined by customers' interest in participation and the ability of contractors and the GRI to quickly expand to meet customer demand. The City currently lacks the contractor capability to meet the substantial new demand for building efficiency that PAYS[®] will create. More information is needed to determine which measures will provide reliable returns for customers. The above timeline was designed to allow time to develop consumer understanding and confidence in this new way to purchase efficiency and renewable products.

During the first four years of program activity, the City and CPS Energy will be better able to determine the size of the market that can be served by its Green Retrofit Program, how best to approach the many City homes needing major renovation and rehabilitation, and to adapt and include many of the new technologies and retrofit practices likely to change what a Green Retrofit should entail (e.g., LED lighting, new cooling technologies, new insulation products and treatments, etc.).

D. Targeted Markets & Measures

The goal is eventually to have most residents, businesses, and institutions in the City participate in its Green Retrofit Program, helping CPS Energy to provide the lowest possible energy costs by cost effectively meeting its efficiency and renewable goals, providing green jobs for City residents, improving the City's housing stock and educating its residents to adopt greener and more economically sustainable life styles, and to reap the myriad benefits of its broader sustainable initiatives.

However, as noted above, this will be the first PAYS[®] effort in Texas. Most City residents and businesses are relatively inexperienced in purchasing and installing cost effective efficiency and renewable technologies. To ensure success, the Pilot phase and the first few years of the Green Retrofit Program will focus on the markets that will most readily benefit from green retrofits while the program partners (the City, CPS Energy, program staff, contractors, and community and advocacy groups) learn what is possible and what is desirable.

During the Introductory and Pilot phases, the program will target the following:

1. Residential single-family buildings⁴ – These properties include owner-occupied and rental buildings. Independent assessment must determine that:

⁴ Serving the residential market will require a fuel-blind tariff, one that allows the costs for measures saving gas, sewer and water to be billed on the electric bill. For the first few years, the City and CPS Energy will likely limit tariff availability to specific neighborhoods to ensure that demand for services does not exceed program capacity.

- the home will not require major rehabilitation within 15 years;
 - the home has a central air conditioner or one or more room air conditioners with a seasonal energy efficiency ratio (SEER) of 9 or less that the owner agrees to replace with an approved high efficiency model and/or the hot water is heated with electricity, the home qualifies for installation of an active solar water system (e.g., electric hot water heating, sufficient solar insulation, and likely, long-term, more-than-average hot water use), and the owner agrees to install a solar water heating system (SWH);
 - the homeowner (and occupant if different) agrees to installation of all cost effective measures (e.g., SAWS upgrade, air sealing, compact fluorescent lights, attic cap, or film on south or south-west glazing)
 - the bill payer agrees to participate in the Residential Energy Education program and any evaluation activities;
 - the bill payer agrees to participate in CPS Energy’s load control program (not binding on successor customer, however, successor customers will start off under load control).
2. Residential multi-family buildings – PAYS[®] provides an attractive offer to building owners and tenants who pay for utilities regardless of the expected duration of their occupancy or ownership. Permission from property owners will be obtained to authorize measure implementation. All of the requirements for single-family homes will apply to the multi-family program component. The City and CPS Energy will require property owners to agree to inform the next tenant or property owner of tariff obligations.⁵
3. City and non-profit properties – After the Introductory phase, the City may allow other MUSH (municipal, university, school, or hospital) customers to participate. Energy cost reductions in these public and private buildings benefit people throughout the City by lowering costs that affect taxes, health care, and public services. These customers often have limited debt capacity and benefit from an offer that permits the work to be done and treated as an expense. In these buildings, the most likely measures to be installed will be lighting and heating, ventilating, air conditioning (HVAC) upgrades and controls. The City may choose to arrange to finance retrofits using bonds or Texas Star funds but still take advantage of other aspects of the Green Retrofit Program (e.g., a debt free investment not requiring voter or budget approval). The City will publicize its involvement in the Green Retrofit Program to encourage widespread participation. Independent assessment must determine that:
- the building does not require major rehabilitation within 15 years; and
 - the building is likely to continue its current uses for the duration of the payment period.

⁵ This group will include buildings where owners pay some or all of the utility bills.

4. SWH projects – During the design phase, CPS Energy will examine the benefits of installing SWH systems that displace primarily gas water heating loads in Commercial and Industrial (C&I) buildings. If the avoided energy costs and carbon offsets warrant sufficient rebate subsidies to qualify measures for the Green Retrofit Program, they will be included in the Introductory and Pilot phases as a measure and target market.

Other than as described above, C&I buildings will be served by CPS Energy's other programs and will not be offered the PAYS[®] tariff at this time. However, after process and impact evaluation (c.f., "Reporting and Evaluation"), CPS Energy may determine that the PAYS[®] platform can lower its program costs while providing cost-effective efficiency and renewable measures to some or all C&I customers and may wish to take advantage of the PAYS[®] tariff if these customers can demonstrate that their facilities are likely to remain in their current use for at least ten years and existing program staff can easily meet their needs. Payback rates for the measures installed in these buildings are typically better than other building types.

During the Pilot phase, residential customers must agree to a minimum installation of \$1,000 to be eligible to use the PAYS[®] tariff to pay for measures and the City or other MUSH customers must agree to projects costing at least \$10,000 to use the tariff. Renters will be responsible for obtaining signed permission from the building owner (a Landlord Agreement will be provided). However, GRI staff or Certified Contractors may help renters obtain building owner permission. It is anticipated that the program will be especially attractive to both renters who have landlords unwilling to fund improvements and building owners of moderate means who have lacked access to capital to fund improvements or the incentive to pay for improvements with little or no direct financial benefit.

E. Targeted Measure Eligibility

For single and multi-family residential customers within the target market, during the Introductory and Pilot phases, any measure that screens cost effective under the 2/3 – 3/4 rule will be eligible. For a measure to screen cost effective under the 2/3 – 3/4 rule, the annual PAYS[®] payments cannot exceed 2/3 of the estimated annual savings with the maximum term used to calculate the payment equal to 3/4 of the useful life of the measure.

This involves a simple Annual Percentage Rate (APR) calculation. This is the same methodology used to calculate mortgage or financing payments. The three variables used to compute monthly payments in an APR calculation are loan amount, interest rate and term. For the Green Retrofit Program, the term is always 3/4 of the useful life of the measures. The interest rate is set to the program's actual cost of capital. The amount to be financed is the proposed cost of a project (less any rebates or upfront payments). The resulting APR monthly payment is then multiplied by 12 to determine annual payments. As long as the annual payments are less than 2/3 of the estimated annual savings, the project can qualify for the PAYS[®] tariff.

During the Introductory and Pilot phases, since all projects will involve either replacement of inefficient central or room air conditioning units⁶ with highly efficient units or SWH systems, CPS Energy will make up to \$2,500 available per home to qualify projects and to cover program fees. The exact amount for each home will be determined by the cost effectiveness analysis and be the minimum amount necessary to qualify measures. After the Pilot phase, it is anticipated the program will move to a 3/4 – 3/4 rule.

Targeted residential measures include high efficiency central and room air conditioning units appropriate for Texas, efficient refrigerators replacing inefficient units that are decommissioned, gas space or water heating system upgrades and replacements, duct sealing and insulation, water heater insulation where appropriate, attic insulation with appropriate ventilation, air sealing with a blower door, rim band joist insulation, installation of efficient lighting (including compact fluorescent lights to replace incandescent bulbs used more than three hours per day), water saving measures, installation of clock thermostats and more comprehensive control systems, and any other measure with savings sufficient to qualify it under the 2/3 – 3/4 rule.⁷

Air sealing for buildings with room air conditioners will be performed with a blower door in order to reduce infiltration down to .35 air changes per hour. For buildings with central systems, air sealing will bring down air infiltration as low as practical, providing a fresh air return is plumbed into the plenum in accordance with ESL's recommendations.

For residential customers, there will be both prescriptive and custom measures:

- Prescriptive Measures: Any customer wanting to use the program to pay for a new air conditioner or solar water system must also install the following prescriptive measures if feasible: compact fluorescent lights (CFLs) replacing incandescent lights operated an average of 3 hours per day or more, air sealing with a blower door, attic void insulation, SAWS recommended water savers and water heater insulation.⁸
- Custom Measures: A Certified Contractor or customer may request installation of any resource efficiency measure using the PAYS[®] tariff, including the incremental cost for a more efficient replacement appliance or other measure, by documenting that it qualifies under the 2/3 – 3/4 rule and that it will be installed by a Certified Contractor.

⁶ Inefficient models will be identified by manufacturers' labels or model year, new units must be properly sized with a Manual J analysis, and ducts must be sealed or insulated.

⁷ During detailed program design, bulk buying select measures (e.g., efficient air conditioners) or using a request for proposals (RFP) to obtain large discounts from a single manufacturer should be investigated as a way of lowering installation costs in order to qualify more measures with large savings.

⁸ During program design, the actual prescriptive measures will be determined.

Both permanent and portable measures are eligible for installation in the program. Tariffed charges for portable measures (such as CFLs) do not run with the meter so they must be paid off by the customer at the time the customer vacates the premises.

For all non-residential customers, detailed program design and marketplace realities will dictate which measures qualify for the PAYS[®] tariff.⁹ These customers will understand that realizing net savings will be dependent on their continuing the same usage patterns and being charged the same utility rates. Therefore, measures will qualify for the tariff if they screen cost effective according to the 3/4 – 3/4 rule (i.e., the annual payments cannot exceed 3/4 of the estimated annual savings). It is also likely that the detailed design or experience during the Introductory or Pilot phases may result in a list of prescriptive measures that will be required for non-residential customers to have access to the PAYS[®] tariff.

As noted earlier, CPS Energy will have to determine the merits of offering rebates to make installation of SWH systems cost effective for non-residential customers. According to some experts, most potential projects would displace gas rather than electric energy. Even should CPS Energy decide not to offer any rebates for projects that displace gas energy, it is possible, that the tax and carbon credits may be sufficient to encourage one or more C&I customers to pay the portion of the upfront cost required to qualify solar projects.

For all classes of customers, for measures to be eligible for the PAYS[®] tariff, they must be Energy Star certified and recommended for the proposed application by ESL. During development of the detailed program design, the City may adopt criteria for measures that do not have Energy Star criteria or adopt a more rigorous standard, such as those proposed by the Build San Antonio Green program. Additionally, to minimize any Green Retrofit related bad debt, during the design phase, prepaid service contracts and extended warranties will be considered for major measures.

F. Marketing

A Certified Contractor with an offer “too good to refuse” is all that is required to market PAYS[®] measures. Certified Contractors should have no trouble selling measures when they are able to offer customers installations:

- without any upfront payment or no new debt,
- without needing a public vote or board approval (for MUSH customers), and
- with the assurance that an independent trusted entity will verify that savings estimates significantly exceed payments and that measures will be appropriate, the promise that if measures are reported as not working they will be repaired or the customer’s payment obligation will stop, and if the customer vacates the premises, the customer’s payment obligation will stop.

⁹ Based on programs in other jurisdictions, HVAC and lighting will be among targeted measures.

That is why the assumption in this concept paper is that Certified Contractors will want to market their products and services using the opportunity of this new offer.

However, the Green Retrofit Program will be more successful if potential participants have heard about this unique offer many times before receiving their offer and have heard it from people and organizations that they trust.

A public awareness campaign for residential customers in target neighborhoods will entail contacts with church leaders and neighborhood groups, presentations in schools, background television and print news stories, and advocacy groups informing members in target neighborhoods. Tenant organizations will also be contacted to help market the program to residents of targeted multi-family buildings. A meeting at the City or CPS Energy for all large property owners to inform them of the program will help identify building owners interested enough in signing up their tenants.

No public awareness campaign should be needed for City buildings or other MUSH customers (i.e., managers of municipal, university, school, or hospital buildings) prior to completion of the Pilot phase. Once the City demonstrates how Green Retrofit Program is working to improve the energy efficiency of City buildings and can work equally well for other buildings, the City will be used as an example for other MUSH customers and set the stage for the more comprehensive retrofit of their buildings.

If CPS Energy decides to implement the SWH component and to make sufficient rebates available to qualify units for the tariff, there will be no background marketing for these projects. Certified SWH Contractors will be invited to propose projects within the guidelines and rebate resources established by CPS Energy. The assumption is that being able to make the PAYS[®] offer for these measures should not require additional marketing.

G. Funding

The Green Retrofit Program requires funding for three categories of costs: start-up costs, operating costs, and measure costs.

Start-up costs are one-time costs required to develop a workable program. They include costs for program design, legal review, making billing system adjustments, developing and providing training to key staff, and operating and assessing the Introductory phase (a trial run of the program). Given the rapid start-up, start-up costs must be funded with one-time money from CPS Energy or the City. EEI does not believe start-up costs can be recovered from participants.

Operating costs are the ongoing annual costs for program operation. These costs include any costs for billing and accounting, public information campaign costs, and costs for staffing to review energy audits, talk with customers, do site inspections, coordinate any needed repairs, follow up on complaints, etc. Operating costs for the City and C&I customers, if any, should be included in the PAYS[®] charge for measures on these participant's utility bills.

During the Introductory and Pilot phases, GRI services for residential customers will come from the up to \$2,500 per home incentive provided by CPS Energy. EEI does not believe any operating costs can be recovered from single-family residential customers. Doing so would severely limit the program to serving very few customers with only the most cost effective savings opportunities. Instead, every effort should be made to keep these costs as low as possible. EEI estimates that operational costs for residential participants will be \$75 - \$100 per home.

During the Pilot phase, it should be possible to use project costs and savings data to determine how much multi-family residential participants can contribute, if anything, and how much multi-family building owners should be able to contribute.

Measure costs are the costs to purchase and install eligible efficiency measures in customers' homes and facilities. They also include any costs required during the payment term to repair measures. Measure costs are paid upfront with funds from a capital provider. Funds for measure costs will be provided through the lowest cost available capital including public bonds, private capital, utility capital, and pension funds as well as vendor and manufacturer financing. This capital will be repaid with interest at an agreed upon rate from the payment stream generated by customers who have received installation of Green Retrofit Program measures and are paying PAYS[®] charges on their utility bills. Capital Providers will have the assurance that CPS Energy will repay them monthly based on customer billings of PAYS[®] charges regardless of actual collections.

At this point, it is impossible to project operational costs and capital needs for the Green Retrofit Program with precision. However, Appendix A provides preliminary estimates.

H. Delivery Structure

In order to minimize any potential market confusion that could result from the introduction of a new option for funding the installation of energy efficiency measures, every effort will be made to integrate delivery of the Green Retrofit Program with currently available other San Antonio efficiency services.¹⁰

The roles of the key players required to make the City's program's work with the PAYS[®] platform are described below.

Utility: CPS Energy's primary role in the Green Retrofit Program is billing and collection of PAYS[®] tariffed charges. It will be necessary for CPS Energy to guarantee

¹⁰ This concept paper envisions a market-driven program. The more program activities the Green Retrofit program attempts to do in-house, the greater the demands on program staff (qualifications, training, support), which will both increase operational costs and reduce the program's ability to respond to demand for services in a timely way. The detailed program design will need to resolve the tension between the costs associated with a heavily staffed program and a more efficient market-based program able to reach more of the City's residents and businesses described in this concept paper.

payment to Green Retrofit Capital Providers based on the monthly tariff billings to its customers. CPS Energy will have its usual tools for bill collection, including the threat of disconnection and ratepayer coverage of bad debt.

Green Retrofit Program-related bad debt¹¹ will be minimized by the threat of disconnection for non-payment, the ability to extend payments to cover repair costs and missed payments, and other assurances (e.g., contractor bonding, pre-qualifying structures, extended warranties, and service contracts). Additionally, all participants will be less likely to have difficulty paying their bills than they would have been absent their participation (since they will have lower overall energy bills after installation of program measures). Therefore, CPS Energy's overall bad debt will most likely be reduced.

Owners of properties where PAYS[®] tariffs are in effect will notify buyers or new tenants of the tariff obligation or be subject to penalties (e.g., consequential damages and rescission of any lease or purchase agreement at the renter's or purchaser's option). CPS Energy will send all new customers at locations with PAYS[®] tariff obligations a letter notifying them of the tariff, all their responsibilities, and their savings from Green Retrofit Program measure installation at their premises to ensure any building owner's failure to disclose is quickly discovered.

It is likely that customers with concerns about Green Retrofit matters will call CPS Energy. CPS Energy customer service staff will need to be trained to handle such calls by directing these customers to the GRI.

CPS Energy has also agreed in principle to pay incentives for participation by residential customers (some of which are proposed to cover operational expenses). It must also agree to abide by contractual terms regarding EEI ownership of contracts, forms, and other intellectual property, including distribution thereof unless the City decides to develop its own.

Green Retrofit Intermediary: The GRI, which will be either a City Agency, an entity owned by the City, or an independent non-profit, will be the gatekeeper to all PAYS[®] activity. It will oversee either in-house or contracted staff. Two staff people should be able to handle all residential GRI responsibilities during the Introductory and Pilot phases. During detailed program design the duties and responsibilities of the GRI will be delineated, contracts developed to institutionalize these duties and responsibilities, and an organization will be selected to fulfill them or an RFP developed. It is likely a different organization will provide these services for City and C&I customers.

However, some duties and responsibilities are inherent in this role. Potential purchasers of PAYS[®] products must have confidence that there will be savings and that measures will last throughout the payment term. Independent verification of product savings estimates is crucial to creating consumer confidence. Additionally, customers need to know that products meet PAYS[®] standards for operability, safety and efficiency; are

¹¹ Possible sources of bad debt under the Green Retrofit Program include missed payments, non-payment, buildings that are taken off the grid, and measure failure without possibility of repair.

appropriate for the customer's application; and are properly installed. Certification also assures the utility of a reliable payment stream from installed products that produce reliable savings for enough years to recover all costs.

The type of entity selected to be the GRI is critical to the certification process. This entity needs to be widely trusted by consumers. PAYS[®] customers also need to know there is someone they can turn to if something goes wrong, who has the power to make it right, and who will make it right.

The GRI will provide residential customers with the following services:

- Certification of contractors, including getting signed contracts from interested renewable and efficiency vendors, verifying bonding that protects owners and/or customers for the duration of payments, and training contractors to meet program standards.
- Verification either by telephone or selected on-site inspections that contractors' savings estimates are accurate, that measures are appropriate for the home, that no other claims have been made, and that installation will result in net savings for the occupant.
- Assurance that program limits on funding are not exceeded.
- Verification of appropriate measure installation by telephone or onsite inspection. All participants will receive telephone inspections and on-site inspections will be budgeted for about ten percent of participants. Contractors whose performance necessitates additional on-site inspections will pay for unbudgeted inspections. The GRI will also help resolve disputes with contractors, and assist in obtaining relief if measures fail (i.e., effecting repair or payment cessation).
- Requiring contractors (or their bonding agent) to make good on their contracts, including paying penalties for failed inspections.
- The GRI will arrange for disbursements to Certified Contractors for measure installations and repairs and notify CPS Energy when to initiate PAYS[®] tariffs and when to stop charges if measures fail and cannot be repaired.

Any of the better home energy rating organizations could provide these services. EEI estimates that once all systems are in place and functioning, one staff person backed up with full-time office support can handle 3,000 homes per year. EEI estimates this field person will be able to inspect 300 residences a year (approximately ten percent of the 3,000) and supplement on-site visits with telephone contacts to all participants. If additional inspections are required because of faulty assessments or poor workmanship they will be performed by contracted firms and paid for by the Certified Vendors causing the need.

One way to obtain an appropriate GRI subcontractor for City buildings (and possibly other public customers if Green Retrofit services are made available to them) would be to issue an RFP inviting interested firms to propose projects for a selected City building. The firm that proposes the most viable and comprehensive retrofit that qualifies for the PAYS[®] tariff under the 3/4 – 3/4 rule would be selected and paid a fee for its oversight of

work (e.g., 10% of project costs), providing its fee was included in the cost effectiveness calculation). It would perform the same functions noted above for residential customers but the audit would likely be a traditional engineering analysis (albeit without inflation or fuel escalation factors in order to ensure customers receive immediate net savings).

If CPS Energy decides to offer a solar hot water (SHW) Green Retrofit component, a similar approach could be used to select GRI subcontractor for this work. Solar firms could partner with engineering firms to propose projects offering the greatest savings for a given CPS Energy incentive.

The GRI relationship will be created by contracts signed by the customer, Certified Contractor, GRI, and CPS Energy. As the customer's agent, the GRI will help ensure the customer, Certified Vendor, and the participating utility fulfill all their program responsibilities.

Capital Provider: Some entity needs to provide funds to pay contractors for the installed renewable and efficiency measures. One or more Capital Providers will provide these funds. CPS Energy will repay the Capital Provider(s) its money, including interest, each month. Payment will be guaranteed by CPS Energy or the City. Because the tariff and this program will be approved by the City, there is no real risk to the Capital Provider. It is expected that the selected Capital Provider will offer sufficient funds for the Pilot at the lowest possible interest rate.

One way this might work would be for the GRI to be a wholly owned non-profit subsidiary of the City. It would issue a tax-exempt bond. The funds would be placed at a suitable institution for an interest fee equal to the bond rate if possible. Once funds were used to pay for measures, the GRI would notify CPS Energy to begin collections on the utility bill. CPS Energy would collect tariffed charges and send funds to the GRI. The GRI would use these funds to pay off the bond. It is also possible that another form of investment might be structured.

The Capital Provider must also agree to provide funds required to pay for repairs authorized by the GRI. Payments for repairs will be repaid by extending the term for existing Green Retrofit charges. The length of the extension will be calculated so as to recover the cost of the repair and the cost of deferring interest and payment collection until after the current payment term.

Certified Contractors: Any provider of renewable or resource efficiency goods and services may become a Certified Contractor. Certified Contractors must agree to sign a Contractor Agreement and abide by all program rules. The Contractor Agreement will be required to provide a high level of assurance. For example, Certified Contractors must agree to be bonded or provide irrevocable letters of credit from a bank to assure compliance (and to allow partial payments prior to completion of satisfactory measure installation), and to provide warranties (possibly extended to equal the term of customer payments). During detailed program design, the decision about whether to require prepaid service contracts for the life of measures will be made. Certified Contractors

must agree to be responsible for the quality of their workmanship, compliance with federal, state and local standards, provision of required permits in their proposed project cost, etc. The detailed program design will specify all Certified Contractor responsibilities.

Certified Contractors must also agree to pay an initial participation fee (waived during the Introductory phase), training fees, and fees related to failed inspections, which will help to pay for GRI services.

The City should invite review of the detailed program design by selected contractors likely to participate in this program to take advantage of their familiarity with target customers' needs and concerns. Additionally, the GRI will try to coordinate with other building-improvement opportunities such as lead abatement or code-compliance programs to facilitate additional work identified in City properties.

I. Alternate Delivery Structure

Some Public Service Commissions and utilities do not consider programs designed to achieve energy reductions an essential service. They do not equate delivering megawatts the same as kilowatts. Hence, unlike jurisdictions (e.g., Kansas Corporations Commission and New Hampshire Public Utilities Commission) that have approved programs based on the PAYS® system, these Commissions and utilities determine that they cannot disconnect for non-payment, guarantee non-payment to capital providers, or link the payment obligation to the meter.

For such utilities, it is possible to design a program, at least for owner-occupied structures, that has all of the same assurances as the program outlined in this concept paper. The most obvious way to design such a program is to model the program on the Berkeley, California program, assigning the obligation to the property, with payment linked to property tax, and the threat of foreclosure for non-payment. Another approach is to use a conditional lien on a property. This lien would both disclose the monthly program payment obligation at the location and it would also require satisfaction of any unpaid billed charges at the time of transfer of ownership. Additionally, sellers would be required to reimburse the City for any interest costs or fees associated with advancing unpaid billed charges to the Capital Provider.

The following are the essential requirements for using this second alternative approach to implement San Antonio's Green Retrofit program:

- Assigning the payment obligation to the property through the owner signing and recording a disclosure/conditional lien placed against the property. This lien would both notify potential new owners of the payment obligation and require satisfaction of unpaid billed charges before transfer of ownership.
- The City agreeing to advance payment to the capital provider in anticipation of recovery based on eventual sale or transfer of properties. The only risk to the city would be properties that never transfer ownership.
- Billing and collection by CPS Energy (without disconnection for non-payment).

- Notifying successor customers of their payment obligation to ensure disclosure and to facilitate collections.
- CPS Energy making the \$2,500 per unit rebate available to help qualify measures.

All of the other roles and mechanisms, such as measure certification, contractor certification, the roles of the GRI, etc. would remain the same as outlined in this paper. It may even be possible, to draft contracts so that measure ownership during the duration of payments belongs to the capital provider so that it could realize tax and carbon credits, use some of that value to lower measure costs, and the property owners incur no additional debt.

If a Commission or utility agreed to disconnection for non-payment, it also might be possible for the Green Retrofit Program to successfully offer measures to renters in apartment complexes. Landlords would have to agree to cover bad debt resulting from missed payments not recovered from renters. However, some landlords might agree to do so if they were sufficiently interested in having tenants pay almost all costs to upgrade the energy efficiency of their buildings and for installation of essential equipment (e.g., air conditioners or solar water heating systems). Some landlords might think the threat of disconnection for non-payment is sufficient protection to mitigate most of the risk they would incur.

I. Reporting and Evaluation

There are two types of evaluation: process and impact.

Process Evaluation: Subsequent to the Introductory Phase and the first four months of the Pilot Phase, the City will implement an internal process evaluation consisting of interviews with community leaders (including members of key green organizations, politicians, and CPS Energy decision makers); selected program staff, contractors, and program partners; and participants from different markets to assess the performance of program operations and make any necessary design adjustments prior to the second half of the first year of the Pilot phase.

A comprehensive, independent, process evaluation will be completed by the end of the first year. Six months of data collected from months 4 - 9 of the Pilot phase will be used to avoid outliers resulting from start-up issues skewing the process evaluation and to allow the evaluation to be completed in time. The process evaluation will seek to answer questions such as:

- Do more customers accept installation of measures?
- Are there adequate sources of capital for efficiency measures?
- Does the program overcome the key market barriers to customer installation of efficiency measures?
- What, if any, losses were associated with the PAYS[®] tariff?
- Has CPS Energy disconnected any customer because of PAYS[®] related bad debt?
- What comments, if any, have the partners received from Green Retrofit participants?

- What improvements should be made to the Green Retrofit delivery structure?

The actual process evaluation protocols will be developed during detailed program design. The lessons learned in the first year of the Pilot phase will be use to improve the design of the Green Retrofit Program to facilitate its rapid expansion.

Impact Evaluation: PAYS[®] evaluations are unlike any other program. Participation requires detailed cost and savings estimates that can facilitate impact evaluation. Since customers are paying for measures, any failures and problems are usually brought to the GRI's attention. Since most measure installation costs are repaid by participants, PAYS[®] programs should easily pass Utility Cost tests. Since participants pay 100% for all cost effective measures, free-ridership is often omitted from evaluations. CPS Energy will need an impact evaluation to assess whether the PAYS[®] platform should be a key component of its future efficiency efforts and whether, in fact, it substantially reduces utility costs for programs that effect real resource efficiency and installation of renewables.

J. Next Steps

Beginning with the Introductory phase on April 1, 2009 and the Pilot phase on June 1, 2009 is a very optimistic time frame. Any delays or problems may require postponing program startup. CPS Energy and the City will work with Sustainable Systems and other parties to ensure these deadlines are met. In order to accomplish this goal, the following steps need to be completed on schedule:

- Decision in principle by City to proceed by December 12, 2008. The City will need to determine if it should proceed with the next step of finalizing a concept paper on which all parties can agree.
- Circulate draft concept paper by December 15th and make changes by January 1, 2009. This concept paper should be circulated to selected community and environmental leaders by December 15th and their input should be sought, if possible at a professionally facilitated meeting. The support of these leaders will be essential for rapid and successful implementation of the Introductory and Pilot phases.
- Complete detailed program design by March 1st. The Green Retrofit Program will be the first PAYS[®] program in Texas. Every aspect of the program will need to be spelled out. All of the contracts, forms, and protocols will need to be developed and training needs identified. More importantly, a detailed design will facilitate a successful effort by ensuring that key policy decisions are made by those who understand the program vision, not by field staff in the middle of implementation and crises. During the two-month design phase, which is assumed to begin on January 1, program size will be determined, capital will be developed, and the GRI will be established.
- Implement billing system changes in time for a April 1, 2009 Introductory phase and June 1, 2009 Pilot Start Dates. It is likely that CPS Energy will need to make

modifications to its billing and information services to perform billing and collection activities and manage customer enquiries (before directing them to the GRI). The Introductory phase will be small enough to lend itself to manual billing adjustments. However, changes will need to be made prior to Pilot start-up. This will require immediate planning and coordination on the part of CPS Energy and the City's Green Retrofit Program designers.

- Select and contract with Green Retrofit Intermediary by March 21, 2009. In order to implement the Introductory phase by April 1, 2009, a GRI must be established and a contract with CPS Energy must be executed. As the duties and responsibilities are more clearly defined during the design process, it should be possible to vet potential GRI subcontractors during the design process. It may become clear which entity wants and is able to fulfill this essential role or an RFP process may be required.
- Implement training programs in March, 2009. GRI staff, vendors, and utility customer service staff will need to know how to fulfill their Pilot responsibilities. Effective training programs developed during the design phase for everyone involved will be essential for an effective Introductory and Pilot phases.
- Select and contract with Capital Provider by April 1, 2009. In order to implement the Introductory phase by April 1, 2009, a Capital Provider must be selected and under contract. During the design process, the trade offs between CPS Energy or City bonding and third party capital should become clear. If a third party capital provider is preferred, Sustainable Systems may be able to negotiate a relationship with one acceptable to the City and CPS Energy or an RFP process may be required.
- Introductory phase commences on April 1, 2009. During the design process and even during the solicitation of input from community leaders, it is likely that most of the first 50 customers for the single-family component of the Introductory phase will be identified. Similarly, one multi-family building owner will have volunteered to participate. CPS Energy and the City will likely have agreed upon a City building (and if included in this phase a solar project). Phone calls will be sufficient to market to these initial participants.
- Certified Contractor solicitation during program design and startup (April 1, 2009 – May 30, 2009). A market driven effort cannot be successful without the informed participation of resource efficiency contractors. Key vendors should be asked to vet the design. If vendors do not grasp the marketing power of the PAYS[®] offer, they will not be willing to fulfill their myriad responsibilities. As soon as a GRI is in place, contractors for the Introductory and Pilot phases should be solicited.
- Enroll other support between the Introductory and Pilot phases (April 1, 2009 – May 30, 2009). By this time, the target neighborhoods will have been selected. There are likely a number of churches, neighborhood groups and green organizations with members in these neighborhoods whose support will be instrumental for a successful pilot. Similarly, trade associations and groups of owners of large apartment

complexes and tenant associations and neighborhood groups may help enroll landlords and tenants for the multi-family component. For the first year of the pilot, it may be necessary to hire such groups to solicit participation.

- Focus group meetings to finalize design during May, 2009. Once the Introductory phase is well underway, focus group meetings with GRI staff, Certified Contractors, and initial participants should be held to discuss possible final enhancements to program design.
- Implement marketing plan in May, 2009. Once the Introductory phase is well underway, the marketing effort specified in the detailed pilot design should be implemented. Potential participants have no idea what a PAYS[®] tariff is or why they should want to use it to buy efficiency and renewable measures. If landlords have received marketing from trade associations and associates they trust and tenants have heard about the Green Retrofit offer from neighborhood groups they trust before measure purchase is recommended, customer acceptance is more likely.
- Initiate Pilot phase by June 1, 2009. If all other deadlines have been met.
- Focus group process evaluation by January 2010. A successful program requires effective evaluation. The best way to determine the success of a market-driven program is to talk with utility personnel (those involved and not involved), political leaders, program staff (including staff of the Green Jobs and Green Education programs), contractors, and of course participants. All participants must agree as a condition of access to the PAYS[®] tariff to participate in evaluation activities. Separate focus groups for community leaders, program staff, and participants should be implemented to answer questions developed during the design phase to facilitate enhancements before the second year of the pilot.

STATEMENT OF QUALIFICATIONS

Energy Efficiency Institute, Inc.

OVERVIEW

EEI's principals, Paul A. Cillo and Harlan Lachman, each have more than thirty years of field-based program design, implementation, and evaluation experience. They have provided on-site efficiency analysis and project oversight for hundreds of homes, small and large commercial facilities, schools, hospitals and colleges. They have designed and managed: low income fuel assistance and weatherization programs in Vermont, Ohio and Texas; Vermont's RCS Energy Auditing and Arranging Service Programs; and award winning utility DSM Programs, including the Burlington Electric Department's Neighbor\$ave compact fluorescent light (CFL) direct-install leasing program. They have performed or participated in numerous program evaluations, including evaluations of low-income programs, utility programs, and Vermont's RCS program.

Cillo and Lachman's current work includes the development of Pay As You Save[®] (PAYS[®]), a market-driven system designed to stimulate consumer purchase of building resource-efficiency measures. They launched the PAYS[®] concept with their 1999 NARUC-sponsored paper on the subject and in 2001 designed the first pilots of the PAYS[®] concept for two New Hampshire utilities. They are the foremost experts on PAYS[®].

They first worked together on Vermont's Residential Conservation Service program. Since 1985, they worked together first at Energy Solutions, Inc., and then beginning in 1988 at the Energy Efficiency Institute.

SELECTED EXPERIENCE

Program Design

- 2007 – 2008 Center on Wisconsin Strategy, Environmental Defense, Sustainable Systems Inc.
Developed concept papers for programs based on the PAYS[®] platform for the Cities of Milwaukee and San Antonio and Oncor's service territory. The Cities and clients remain committed to implementing these programs. The Center on Wisconsin Strategy (COWS) obtained a grant this winter for program design and is waiting for legal opinions from Milwaukee before proceeding with retrofits for residential, commercial and city buildings. San Antonio is evaluating implementation issues and still considering full pilots implemented in June of 2009 addressing residential and city building retrofits and installing solar water heating systems (SWH) in large commercial buildings. The concept paper to provide retrofits in multi-family buildings in Oncor's service territory is being attached to testimony in Docket 35717 this winter.
- 2005 - 2006 Delta Institute, Chicago Illinois.
Worked with the Delta Institute on conceptual development of PAYS[®] pilots for two Michigan municipal utilities (one water utility and one water, steam and electric utility). These pilots would enable residents and local businesses to purchase and install efficiency measures that save gas and electricity, fuels provided by investor-owned utilities that have not offered efficiency programs to help their customers for more than fifteen years. These pilots will also spur local economic activity and be key components of these communities' climate change efforts. In 2008, Michigan applied for grants totaling more than one-half million dollars from the National Governor's Association and the Department of Energy to begin implementing programs based on the PAYS[®] platform, in large part, based on the design work performed for and interest by these municipalities.
- 2004 New Hampshire Public Interest Research Group (NHPIRG).

Designed expansion of the PAYS[®] system in New Hampshire recommended by NHPIRG to utilities and regulators. The design opened PAYS[®] to new markets and new utilities without requiring any additional system benefit funds and within the context of New Hampshire's existing CORE programs. The design included an analysis showing how NHPIRG's recommended approach to PAYS[®] would result in more resource efficiency than the existing rebate programs or the utilities' proposal. The Commission ordered Public Service of New Hampshire (PSNH) and the New Hampshire Electric Co-op (NHEC) to continue offering the PAYS[®] tariff to their customers through 2007 (this order is still in effect as of December 2008).

- 2002 Soluziona Philippines Inc.
Retained as the International Technical Experts, EEI provided the IFC/GEF Efficient Lighting Initiative - Philippines with information on compact fluorescent lighting (CFL) leasing programs we designed and operated in the US and analysis of how the unique barriers experienced in the Philippines will affect CFL penetration. Designed a market-driven CFL leasing program concept to permit Philippine utilities to fulfill their obligation to provide efficiency services to customers at little cost to their utilities. CEPALCO, the Philippines' second largest utility, incorporated EEI-designed features into their proposed program.
- 2001 New Hampshire Electric Co-op/Public Service of New Hampshire
Assisted two utilities with program design for submission to the New Hampshire Public Utilities Commission using the PAYS[®] system to increase customer investment in energy efficiency. The utilities' submission included a detailed work plan, with budgets, draft forms and contracts, target markets, proposed tariffs, and plans for implementation, training, and evaluation. The Commission approved the design on November 29, 2001. With EEI's program start up and staff training assistance, PSNH launched the first PAYS[®] program in the nation on January 1, 2002 and NHEC officially began its pilot on June 1, 2002. A positive evaluation by GDS Associates, Inc. is now available on PAYS America's website (www.paysamerica.org)
- 1994 - 1997 Texas Utilities Electric Company (TUEC) and Central and South West Utilities; Low Income Programs
Developed three low-income weatherization piggyback programs to meet the needs of TUEC's (now Oncor's) low-income customers and the requirements of a Texas Public Utilities Commission's order in Docket 11735. The programs used existing service provider networks (e.g., low income weatherization providers) and innovative bidding and lease fee mechanisms to minimize utility program costs. The programs had a positive benefit-cost ratio, using both the Total Resource Cost (TRC) and Utility Cost (UC) tests (TUEC's programs were independently evaluated by RLW Analytics).

Program Training & Management Assistance

- 2007 Midwest Energy; Management Assistance
Assisted managers at Midwest Energy with design, obtaining regulatory approval, and implementation of their How\$mart program based on PAYS[®]. Midwest Energy used EEI developed forms, contracts and contractual relationships as the basis for their How\$mart effort which received Kansas Corporation Commission approval in December 2007 for a pilot and subsequently for full implementation in September, 2008. This program has provided retrofits for more than 100 residential customers in addition to retrofit of residential rental and commercial buildings.
- 2007 Hawaii Renewable Energy Alliance; Management Assistance
On behalf of Hawaii Renewable Energy Alliance, provided management assistance to Hawaii's four electric utilities, required by Hawaii statute (Act 240) to implement pilots based on the PAYS[®] system to help customers who were renters or who had previously rejected SWH systems as too costly to purchase them. Three of those utilities (HECO companies) took advantage of this management assistance and now offer PAYS[®] pilots through their SolarSaver programs. HECO has recently proposed expanding use of the PAYS[®] system to solar photovoltaic systems.
- 2002 Public Service Company of New Hampshire; Management Assistance
Worked with program managers to develop PAYS[®] product certification standards, evaluation protocols and survey instruments, PAYS[®] tariff calculation methodology and worksheet, and program forms. Helped PSNH trainers refine training agenda and trainees' manual and presented portions of the training for PAYS[®] field staff.
- 1997 Texas Utilities Electric Company; DSM Training
Developed and implemented training programs for a neighborhood summer blitz program operated in Fort Worth Texas and trained low-income weatherization personnel to piggyback utility program measures and services onto their existing programs. Case workers were trained to use meters to evaluate annual refrigerator electric consumption, how to evaluate when replacement of incandescent lighting is cost effective, how to minimize non-utilization of replacement compact fluorescent lights, and when and how to clean refrigerator coils, install water saving devices, and provide basic energy education.
- 1989 - 1991 Burlington Electric Department; Design & Management
Designed, obtained funding for and helped manage a Department of Energy supplemental fuel switching pilot program. The program evaluation (coordinated by Lawrence Berkeley Laboratory) indicated an effective

penetration rate of 66%. The utility received a 1992 D.O.E. Energy Innovation Award, Utility Technology Category, for its fuel switching program. Its fuel switching program has converted more than 50% of the electrically heated residences in the service territory to alternate fuels.

- 1990 Burlington Electric Department; Design & Management
Set-up and managed a residential on-site CFL program, based on one of our earlier program designs. Trained and managed college students to wrap electric water heaters and install water saving devices and to enroll customers in using CFLs. This program achieved more than a 50% penetration rate among all residential customers. At a total cost of less than \$90 per visit (including administration, marketing and materials), more than 70% of those visited installed an average of 4.75 light bulbs and almost all electric water heaters were insulated. The utility received the 1992 APPA Energy Innovator Award.

Expert Witness

- 2006 Michigan Public Service Commission.
Filed comments and testimony with the Michigan Public Service Commission (MPSC) in Case Nos. U-13808, U-14667, and U-14718) (at <http://efile.mpsc.cis.state.mi.us/>) regarding electric and gas utility implementation of PAYS[®] tariffs in Michigan. In one case, involving the Detroit Edison Company (DTE), EEI both supported the company's proposal for a PAYS[®] pilot and suggested specific additions for MPSC consideration to facilitate implementation of PAYS[®] tariffs by DTE and other Michigan utilities.
- 2004 New Hampshire Public Interest Research Group
Served as expert witness to NHPIRG in Docket DE-04-052. None of New Hampshire's utilities wanted to implement all three elements of the PAYS[®] tariff. The Commission ordered both utilities which had implemented PAYS[®] pilots to continue offering the PAYS[®] tariff to customers through 2007.
- 1993 - 1995 Texas Legal Services Center; Expert Witness
Provided testimony focusing on the special needs of low-income ratepayers as part of TUEC Docket 11735. Our testimony included three cost-effective program designs and budgets, targeting DSM services to low-income customers and addressed the impact of cost recovery, performance, and marketing decisions on low-income persons. In its order, the Commission determined that the utility's DSM programs had failed to overcome market barriers to participation by low income customers and ordered the utility to submit, in conjunction with interested parties, programs specifically designed to meet the needs of low income persons as part of its IRP submission.

1993 Office of the Massachusetts Attorney General; Expert Witness
Provided testimony to the Massachusetts Public Utilities Commission on the performance by Commonwealth Electric Company and Cambridge Electric Light Company regarding implementation of DSM programs. EEI's testimony explained the value of establishing milestones for future DSM activity, arranging for independent evaluation of DSM activity, and for implementing predetermined penalties in the event of continued mismanagement of DSM by these utilities. The Commission acknowledged the utility to be remiss in fulfilling its obligations and took what it considered appropriate steps to address its non-performance.

Program Evaluation

1995 Centerior Energy; Evaluation
Provided evaluation of Centerior Energy's Reduce the Use program using the four tests of the California Standard Practice Manual. Used CEI program progress reports, expenditures, avoided costs, and discount rate combined with a custom designed evaluation tool and enhanced engineering savings estimates to determine program cost effectiveness. Although the program failed Ohio's Revised Utility Cost test, it passed the TRC test (the test in effect when the program was designed and operated). The evaluation was accompanied by program worksheets and recommendations for potential enhancements to the program.

1990 Burlington (VT) Electric Department (BED); Evaluation
Assisted BED in obtaining evaluation assistance from Lawrence Berkeley Laboratory (LBL) and worked with BED and LBL staff to design evaluation of BED's supplemental fuel switching program. Also designed and participated in BED's focus group to field test the program as recommended in EEI's original program design.

1989 - 1996 Centerior Energy /TU Electric/Central Power & Light; Evaluation
As part of all of our program designs for these and other utilities, developed benefit-cost analyses using all four tests of the California Standard Practice Manual. All recommended programs passed the TRC, UC, and Participant Cost tests. Some of EEI's Fair Share programs passed the Rate Impact Measure Test. All program designs included detailed plans for process and impact evaluation tailored to each utility's resources and evaluation needs.

SELECTED PUBLICATIONS, PRESENTATIONS & AWARDS

2008 New York State Public Service Commission. Efficiency Portfolio Standard Proceeding, Committee on On-Bill Financing & Tariffed Installation Programs; *PAY As You Save*[®] (*PAYS*[®]) & *On Bill Financing*. Presentation at technical session.

- 2008 American Solar Energy Society. *Is PAYS[®] The Answer to Financing Solar Water Heating Systems?* With Warren S. Bollmeier II of Hawaii Renewable Energy Alliance and Hermina Morita Hawaii House of Representatives. Refereed Conference Proceedings.
- 2008 Carsey Institute at the University of New Hampshire. Policy Leadership Initiative. *Pay As You Save[®]*. Presentation for policy leaders in Maine, New Hampshire, and Vermont.
- 2007 Iowa Utilities Board. *Introduction to PAYS[®]*. (With support from Sierra Club).
- 2007 Hawaii Public Utilities Commission. *Pay As You Save[®] (PAYS[®])* (on behalf of Hawaii Renewable Energy Alliance). Presentation at technical hearing.
- 2007 Hawaii House Energy Committee. *Pay As You Save[®] (PAYS[®])* (on behalf of Hawaii Renewable Energy Alliance). Testimony.
- 2006 Washington, D.C. Energy Office. *Introduction to PAYS[®]* with the Pace Energy Project at Pace University (with support from the Ford Foundation)
- 2005 New York State Energy Research and Development Authority, Albany, NY; *Potential for Development of PAYS[®] in New York State*. Commissioned paper with Fred Zalzman and Daniel Rosenblum of the Pace Energy Project at Pace University
- 2005 Detroit Edison Collaborative, Lansing, MI; *Pay As You Save[®] (PAYS[®])*; Presentation
- 2004 National Association of Regulatory Utility Commissioners Committee on Energy Resources & the Environment; NARUC Winter Committee Meetings; *PAYS[®] Update*; Presentations
- 2003 National Association of Regulatory Utility Commissioners Committee on Energy Resources & the Environment; NARUC Winter Committee Meetings; *PAYS[®] Update*. Presentation
- 2003 Connecticut Department of Public Utility Control, New Britain, CT; *Pay As You Save[®] (PAYS[®])*; Presentation at technical hearing.
- 2002 National Association of Regulatory Utility Commissioners Committee on Energy Resources & the Environment; NARUC Winter Committee Meetings; *PAYS[®] Update*; Presentation.
- 2001 National Association of Regulatory Utility Commissioners Committee on Energy Resources & the Environment; *More Distributed Generation with Pay As You Save[®]*; Commissioned paper.
- 2001 U.S. Combined Heat and Power Association; National CHP Roadmap Workshop; *Pay As You Save[®]: A New Approach to Promoting CHP*; Presentation.
- 2000 New Hampshire Public Utilities Commission; Concord, NH; *Pay As You Save[®] Energy Efficiency Products*; Presentation.
- 2000 Chewonki Foundation; Wiscasset, ME; *Pay As You Save[®] Energy Efficiency Products*; Conference presentation.
- 1999 National Association of Regulatory Utility Commissioners Committee on Energy Resources & the Environment; *PAY AS YOU SAVE[®] ENERGY EFFICIENCY PRODUCTS -- Restructuring Energy Efficiency*; Commissioned paper.
- 1996 National Association For State Community Services Programs; *Making Enhanced Weatherization Cost Effective as Utility DSM*; Presentation
- 1995 National Association of Regulatory Utility Commissioners; *A Win/Win Approach to DSM*; Presentation

- 1994 Electricity Journal; *A Win/Win Approach for C&I Customers*; Volume 7, Number 9; November 1994
- 1992 National Consumer Law Center; *Designing Cost Effective DSM Programs for Low Use Customers*; Conference Presentation.
- 1989 Electric Power Research Institute; *When Electric Utilities Will Invest in Energy Efficiency*; Volume 1; EPRI CU-6367; April 1989. Refereed Conference Proceedings.
- 1988 Governor's Special Commendation For Excellence in Energy; Vermont
- 1985 Department of Energy Technology Transfer Award.
- 1983 Certified Energy Manager; Association of Energy Engineers; Cillo

Appendix C: Financing the Green Retrofit Program

A vital part of the Green Retrofit Program effort is developing the financial mechanism to finance retrofit activities in San Antonio. This mechanism will finance the retrofit labor and supplies, as well as the operations for the Green Retrofit Intermediary, once fully operational. The Development Finance Team (Economic Innovation International, Strategic Development Solutions, and Sustainable Systems) proposes the creation of a tax-exempt bond mechanism for the Green Retrofit Program.

The Development Finance Team has 30 years of experience building various bond mechanisms and bond authorities across the United States. To date, the 12 bond authorities developed by the Development Finance Team have issued more than \$50 billion of taxable and tax-exempt bonds. The bond authorities developed to date are: Alaska Industrial Development and Export Authority (1978), Arkansas Development Finance Authority (1985), Colorado Housing and Finance Authority (1982), Connecticut Development Authority (1987), Finance Authority of Maine (1983), Florida Development Finance Corporation (1994), Kansas Development Finance Authority (1986), Massachusetts Development Finance Authority (1977), Nebraska Investment Finance Authority (1983), Virginia Small Business Finance Authority (1991), Washington Economic Development Finance Authority (1983); Wyoming Community Development (1989).

The tax-exempt bond effort for the Green Retrofit Program is considerably less complex than that involved in the entities above.

Understanding Bonds

A bond is a formal certificate of debt issued in writing by an entity in return for a loan. Bonds are issued by both government entities, and private entities. The issuer sells the bond to an entity or individual that buys the bonds, in essence loaning money to the issuer in return for a bond which assures its repayment. Individuals, financial institutions, bond brokers and others purchase these bonds, and are known as “lenders,” “investors” or more simply, “bondholders.”

The bondholder provides the loan for a defined period of time, and must receive repayment by the maturity date. Through this period, the bondholder also receives interest payments on the loan, and the rate is usually at a fixed rate, or coupon. The price of a bond changes during its lifetime. Generally, the riskier the bond, the higher rate of return a bondholder will receive.

Bonds are backed by the credit of the issuer, and in the case of government, its taxing power. Bonds are rated from AAA to D depending on the bond issuer’s chance of defaulting on the bond. AAA is the highest ranking, with a D rating meaning that the bond is in default. This rating is determined from the issuer’s credit and finances and the profit potential of the bond. Standard & Poor's, Moody's Investors Service and Fitch Investors Service all rate bonds.

In the case of the Green Retrofit Program, the Development Finance Team recommends using Tax-Exempt Revenue Bonds issued by the not-for-profit Green Retrofit Intermediary created by the City of San Antonio to manage the Green Retrofit Program.

“Municipal bonds” are issued by state and local governments and include both tax-exempt and taxable bonds. Bondholders generally pay taxes on the income received from bonds. However, with tax-exempt municipal bonds, bondholders are not required to pay tax, and therefore will accept a lower interest rate from the issuer, anywhere from 1.5 percent to 4 percent below conventional financing. Whether the bonds are taxable or not is determined by the type of project that is going to be funded. Projects that are deemed as helping “the public good” generally qualify as tax-exempt, while projects that benefit a private party (partially or completely) have the interest earned on the bonds taxed. It is anticipated that the Green Retrofit Program will be deemed to have sufficient “publicness” because it is implemented by a not-for-profit instrumentality of the City (the Green Retrofit Intermediary), and therefore exempt from Federal taxation. It is also anticipated that the retrofit activities that the Green Retrofit Intermediary engages in will be deemed a “public good.”

There are two types of tax-exempt municipal bonds:

1. **General obligation bonds.** These bonds are backed by the ability of the municipality to repay its debt obligation by taxation or revenues. General obligation bonds are voter-approved.
2. **Revenue bonds.** Revenue bonds are backed by the revenue from a specific project such as toll roads, bridges or hospitals, and are generally issued by state or local authorities, or their instrumentalities, or not-for-profits created to accomplish public purpose goals and to issue these bonds.

Bonds for the Green Retrofit Program would be revenue bonds.

How the Green Retrofit Program Will Generate Revenue for Bonds

The revenue for the bonds is derived as follows:

1. A Contractor certified by the Green Retrofit Program visits homes and prescribes a set of retrofit measures. When deciding upon which retrofit measures to implement, the Certified Contractor will look at the cost of and anticipated savings for each measure.
2. The homeowner or renter will decide upon retrofit measures.
3. The Certified Contractor will provide an estimate of savings for all selected measures over a 10 year period.
4. The Green Retrofit Intermediary will evaluate the Certified Contractor’s proposed savings and conservatively underwrite anticipated savings. If the proposed savings meet with the Green Retrofit Intermediary’s approval, the Green Retrofit Intermediary will provide the homeowner or renter with an estimate of the impact on the monthly energy bill (including energy savings and surcharge – see 9 below). Once the homeowner or renter reviews the monthly cost/savings, he or she gives permission for the work to the Green Retrofit Intermediary. The Green Retrofit Intermediary then grants the Certified Contract permission to do the work and the work is performed.

5. The Green Retrofit Intermediary will secure a Line of Credit from a commercial bank to warehouse and pay for the Certified Contractors prior to the issuance of a bond. (An amount in excess of \$1 million of retrofit activity is needed prior to the issuance of a bond.)
6. Upon satisfaction of the completion of work, the Green Retrofit Intermediary will pay the Certified Contractor with proceeds from the commercial bank line of credit.
7. When a sufficient number of retrofit financings have been accumulated to warrant the issuance of a bond by the Green Retrofit Intermediary, the Green Retrofit Intermediary then issues such a bond. Structured within the bond is a loan loss reserve that is expected cover any reasonable losses based on non-payment by homeowners or renters. The bond is used to repay the commercial bank line of credit, which is then available for future home retrofit financings.
8. This commercial bank line of credit-bond financing cycle continues indefinitely.
9. CPS Energy will include a surcharge on its bill to homeowners or renters. The surcharge will include the cost of the retrofit, the servicing of the bond issue, and the operation of the Green Retrofit Intermediary. Together, the post-retrofit utility bill and surcharge are expected to be less than the pre-retrofit bill alone.
10. CPS Energy will aggregate all surcharges and pay them directly to the Green Retrofit Intermediary. The Green Retrofit Intermediary will then use the surcharge payments to pay the bondholders on time.
11. Some form of assurance will be needed to prevent any default on individual retrofit contracts. If homeowners or renters default on their payments above the underwritten loan loss reserve and a number of other measures (discussed immediately below), the provider of the assurance will cover those payments. That said, the whole structure of the Green Retrofit Intermediary bond is designed to ensure that the bond gets the highest possible credit rating without having to rely directly on the source of assurance, or ever allow a claim against the source of assurance for a homeowner default. The repayment “insurance” structure should be thought of as a series of buckets: (1) The first bucket is a lien against the property of the homeowner or renter for recovery of default, (2) the second bucket is the credit (loan loss) reserve, which is designed to cover losses based upon similar or related bond issues, and built into the bond issue itself, (3) the third bucket is an additional reserve held by the Green Retrofit Intermediary, (4) the fourth bucket is any external credit insurance arranged for the bond, and (5) the fifth bucket is the assurance noted above.

Building the Tax-Exempt Bond

Based on the experience of the Development Finance Team, building a tax-exempt bond mechanism for the Green Retrofit Intermediary is a two phase process, as detailed below.

The focus of Phase I is to design the bond mechanism given current industry and San Antonio practices, as well as the goals of the Green Retrofit Program. In Phase II, the bond mechanism proposed at the end of Phase I is built. At the conclusion of Phase II, the Green

Retrofit Intermediary will have the bonding capability it needs in order to carry out the Green Retrofit Program's goals.

PHASE I: BOND DESIGN (4 Months)

The following activities of Phase I are interactive and need to be undertaken simultaneously. The five activities include:

1. *Determine Program Needs:* The ideal size of the Green Retrofit Program over time needs to be determined. This information is needed in order to ensure that the bond mechanism devised is of an appropriate size.
2. *Survey Best Practices of Current Tax-Exempt Bonds for Similar Purposes (if any exist):* A survey needs to be conducted of the most innovative bond mechanisms for retrofitting purposes (if any) across the U.S. in order to understand best practices in structure, operations and results.
3. *Research Current Tax-Exempt and Taxable Bond Markets both Domestic and Global:* Given current market turmoil, bond authorities, bond counsel and investment bankers across the country and in Texas need to be researched in order to understand the status of the tax-exempt bond markets in this country and globally, and the relevance to this proposed program. The fact that the City and CPS Energy both have AAA ratings gives the Development Finance Team confidence that it will likely be possible to issue a bond for the Green Retrofit Intermediary despite the current turbulence in the market. This is true even though this bond will not directly have the backing of the City of San Antonio or CPS Energy.
4. *Evaluate Bond Practices and Constituencies in San Antonio and Texas:* Research needs to be undertaken on entities in San Antonio have bonding authority and how bonds currently operate the state of Texas in order to understand what, if any, dimensions of the political and economic culture in the state or region would likely provide strong support for this effort, and which, if any, might find objection. Once these parties are identified, the Development Finance Team will be able to recommend ways in which to enhance their support and address their concerns, based on our 30 year experience building similar institutions in other jurisdictions and successfully addressing similar concerns.
5. *Review Current Regulations in Texas Which May Effect Issuance:* The rules and regulations in Texas regarding creating and/or using bonding authority should be evaluated. In addition to addressing the state mechanism by which the "tax-exempt bond Cap" is currently addressed, the State's Constitution should also be reviewed in order to understand any potential constitutional obstacles which may limit bond financing and credit enhancement. To the extent that any obstacles are identified, ways need to be proposed to address these areas, based on our success in addressing similar obstacles in other constitutions in other jurisdictions over the last decades.
6. *Determine Need for Appropriate Credit Enhancement:* Credit enhancement and credit insurance, which may be purchased from existing credit insurance mechanisms, or created, should be researched. This research then can be used to create the appropriate credit enhancement mechanisms in Phase II. Again, it should be noted that Green Retrofit Intermediary bond will need to be structured so that there is a

loan loss reserve built into the bond issue, itself. This will cover any reasonable default from homeowners, based upon experience with similar bond issues.

7. *Determine Legal, Financial and Regulatory Structure:* It will need to be determined which, of all the model structures surveyed, best serves the Green Retrofit Intermediary given identified market needs and constitutional, regulatory and political economy and culture constraints.
8. *Ensure that Green Retrofit Intermediary is Able to Issue Tax-Exempt Bonds Because of its “Publicness” and “Public Good”:* It needs to be established that retrofits through the Green Retrofit Intermediary qualify for tax-exempt revenue bonds, as discussed in “Understanding Bonds” above. The fact that the Green Retrofit Intermediary is a not-for-profit instrumentality of the municipality should ensure its “publicness.” The green retrofit purposes should ensure is “public goodness.” In addressing this task, the bond ratings of the City and CPS Energy need to be protected. It needs to be determined that the bond mechanism will operate in such a way that it does not compromise the City’s or CPS Energy’s current bond ratings or usage.
9. *Create Appropriate Credit Enhancement, as needed:* Based on the credit enhancement and credit insurance research in this phase and operating experience in other jurisdictions, most appropriate credit enhancement mechanisms for the Green Retrofit Intermediary need to be created.
10. *If Constitutional or Regulatory Barriers are Uncovered, Develop a Successful Strategy based on Previous Experience:* If regulatory or constitutional issues are identified in this phase, a strategy needs to be devised for overcoming them either through financial mechanisms or legal channels, as has been done successfully in other jurisdictions.
11. *Research Bond Counsel and Investment Bankers:* A comprehensive list of bond counsels and investment bankers active in tax-exempt financing in San Antonio, including both national and local firms needs to be prepared. From this list, the top targets for involvement with the Green Retrofit Program need to be identified. The request for proposals (RFP) process for selecting bond counsel and investment bankers will take place in Phase II.

At the completion of Phase I, a Phase I Bond Design Report should be presented to the City detailing all findings and a reasonable path to the successful building of a tax-exempt bond that meets the needs of the Green Retrofit Program and City. The report should also suggest sound approaches to any obstacles encountered during Phase I. After reviewing the Phase I Bond Design Report, the City can make an appropriate “Go/No Go” decision in order to proceed to Phase II.

PHASE II: BUILD TAX-EXEMPT BOND MECHANISM (6 Months)

In Phase II, the bond mechanism would be built for the Green Retrofit Intermediary.

Activities in Phase II include:

1. *Design an appropriate mechanism based on the Findings in Phase I:* If the Decision of Phase I is “Go”, then the legal, managerial, credit enhancement and line of credit

mechanisms necessary to make the Tax-Exempt Bond Mechanism workable need to be developed.

2. *Create Appropriate Credit Enhancement Mechanisms, as agreed to in Phase I:* The credit insurance/enhancement for the development finance mechanism as outlined in Phase I need to be obtained or created.
3. *Obtain Rating from Bond Agencies:* A rating from a bond rating agency for the Green Retrofit Intermediary needs to be obtained. This is a vital part of bringing bonds to market.
4. *Identify Bond Counsel:* An RFP process needs to be managed in order to identify which bond counsel will be engaged by the Green Retrofit Intermediary.
5. *Identify Investment Bankers:* An RFP process also needs to be managed in order to identify which investment bankers will be engaged by the Green Retrofit Intermediary.
6. *Staff the Finance Wing of the Green Retrofit Intermediary:* Job descriptions need to be developed for senior finance leadership at the Green Retrofit Intermediary, appropriate staffing levels need to be proposed for the organization's financial activities, and advice needs to be provided during hiring, as requested by the Green Retrofit Intermediary.
7. *Arrange Line of Credit with a San Antonio Bank:* A line of credit needs to be established with a San Antonio bank.
8. *Arrange for first Tax-Exempt Bond Issue:* The first tax-exempt bond in the series needs to be issued.

At the completion of Phase II, the Green Retrofit Intermediary's bond capability will exist and function as the finance mechanism for achieving the goals of the Green Retrofit Program.