

**Tariffed Installation Program White Paper:  
A Proposal to Harness Private Capital to Fund Energy Efficiency  
Upgrades**

I. Introduction

New York State has set an extremely aggressive goal of 15% energy reduction below forecasted levels by 2015 (“15 by 15”) <sup>1</sup>. To help meet this goal, it is incumbent upon New York to develop and fund programs that contribute to reduced energy consumption in all types of buildings around the State. Specifically, New York needs a ubiquitous approach to harness potential energy savings to pay for energy reduction measures that could grow to reach all customers with limited amounts of public funding.

Programs to meet 15 by 15 must recognize the financial limitations on *utility companies* to completely fund the energy efficiency projects. Several factors limit the amount of capital which investor-owned utilities can allocate to energy-efficiency programs, absent rate increases to already-burdened New York State ratepayers, including the following:

- Increased utility costs associated with increased demand for energy, particularly downstate;
- Increased demand for enhanced delivery system reliability, particularly to support the increased proliferation of electronic devices and other voltage-sensitive technical equipment;
- The declared need by New York’s Independent Systems Operators for additional transmission infrastructure to assure system reliability; and
- The capital and expense costs associated with operating and maintaining an aging delivery infrastructure, and with expanding that infrastructure to support the above increased energy and reliability demands.<sup>2</sup>

*Ratepayer-funded* subsidies are a possible option to address the need for incremental capital but they suffer from numerous deficiencies, including the following:

- Inability to promote the installation of energy efficiency improvements on a broad scale;
- Lack of sustainability for the long term; and
- Need to share costs evenly among all, already-burdened ratepayers even though only some ratepayers benefit directly from the programs.

Parties in the State’s Public Service Commission’s (PSC) Energy Efficiency Portfolio Standard Proceeding (“EPS Proceeding”) acknowledged that one of the major barriers generally preventing full utilization of energy efficiency programs is the *individual customers’* inability to raise the up-front costs

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<sup>1</sup> “15 by 15” *A Clean Energy Strategy for New York*.

<sup>2</sup> *A Vision for New York State’s Energy Future*, The Members of the Energy Association of New York State, Feb. 15, 2008, page 3.

needed to implement energy efficiency projects. Unlocking private capital for energy efficiency upgrades must therefore be one of the key components of any program aimed to significantly contribute to the 15 by 15 goals.

An on-bill tariffed installation program (TIP), described in this paper, creates access to private capital to pay for up-front costs of individual customers' energy efficiency improvements. It also promotes broad customer participation because energy efficiency project costs may be claimed as operating expense items rather than additional debt. An 18-month study by GDS Associates examined a New Hampshire pilot program which covered up-front costs for energy upgrades and received repayments via utility bills. The study found that the program was effective in attracting customers who would not otherwise install energy efficiency upgrades at their own cost.<sup>3</sup>

Private investors are attracted to the program because it provides a simple mechanism for repayment of their investments by direct payment through monthly utility bills. The repayments can be secured by the utility's ability to threaten disconnection for non-payment. A study by the Energy Efficiency Institute and the Pace Energy Project confirmed that the possibility of disconnection dramatically decreased the number of defaulting customers. This same study found that the threat of disconnection generally enables utilities to achieve much higher repayment rates than those realized by credit card companies or mortgage lenders.<sup>4</sup>

While utilities cannot and should not bear customers' capital costs to install energy efficiency projects, utilities have strongly asserted that they be given a broad role in the administration and achievement of the 15 by 15 target. The Administrative Law Judges, in their February 11 *Ruling Presenting Straw Proposal* in the EPS Proceeding, have acknowledged the important role that utilities can play, stating that "Utilities can bring access to end-use customers, especially mass market customers, an ability to leverage outside funding through on-bill financing, and the potential to integrate energy efficiency with overall energy resource planning."<sup>5</sup>

The TIP proposal discussed herein would tap into the unique role that utilities can play in achieving the State's 15 by 15 goal.

## II. TIP Proposal

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<sup>3</sup> *Process Evaluation of the Pilot "Pay as You Save" (PAYS) Energy Efficiency Program*, GDS Associates, Inc., December 2003, page 73.

<sup>4</sup> *Potential for Development of PAYS in New York State*, Cillo, P. and Lachman, H. from Energy Efficiency Institute; Rosenblum, D. and Zalzman, F. from Pace Energy Project, August 2005, page 3.

<sup>5</sup> *NYPSC Case 07-M-0548 - Proceeding on Motion of the Commission Regarding an Energy Efficiency Portfolio Standard, ALJs Ruling* (issued February 11, 2008), page 2.

Figure 1 illustrates the proposed TIP structure. Private investors provide funds for upgrades to an administrative pass-through entity. This entity contracts with the participating utilities for the implementation of energy efficiency projects with the customers. The utilities, either using their own resources or those of private energy services contractors, perform the work. The private investors are repaid with interest at an agreed upon schedule from a portion of the savings received by those customers who choose to participate in TIP. Participating customers are assessed a non-bypassable utility tariffed charge on the delivery portion of the utilities' bills in the amount of their respective repayment obligations and remit payment to the utility. The utilities, in turn, remit payment to the administrative pass-through entity, which transfer the funds to investors.

A sample utility bill in Figure 2 shows how customers who receive energy upgrades that produce significant savings benefit from lower net bills. Because the TIP program would include an audit and implementation component, customers are assured of having lower net energy costs immediately after the measures are installed, with no up-front costs of participation even after taking into account financing and administrative charges.

The cost of financing allocable to the customer's energy efficiency improvements is tied to the premises meter(s) and not the customer. If the original TIP recipient moves or otherwise vacates the premises, the subsequent owners or occupants will be required to assume responsibility for repayment of remaining financing costs as a condition of receiving electric utility service at the premises. Further, electric service may be subject to shut-off in the event a TIP payee defaults on the repayment obligation. More importantly, attaching the obligation to the meter rather than to the customer allows debt to be treated as an expense. Since credit capacity is not affected, the pool of potential participants is significantly increased.

### III. TIP Advantages Over Ratepayer-Funded Subsidies

The TIP program described in the Administrative Law Judges' Straw Proposal will not only help the State achieve its electricity reduction goal by tapping into the strengths of utility companies. It will also take financial pressure off the utility ratepayer base because once the program is in place, all measure costs of the program are paid for exclusively by participating customers.

Programs that rely on a systems benefit charge (SBC) or other similar ratepayer charge are not sustainable or affordable in the long term. They require the entire rate base to pay for efficiency upgrades that benefit only some customers. The proposed TIP program requires only the participating customer and its successors to bear the cost of the upgrade as they will have the benefit of lower bills. Other ratepayers who do not directly benefit from the installed improvements are not expected to pay extra charges but still receive substantial

benefits, including environmental savings that result from decreased energy consumption and an increase in delivery system reliability.

#### IV. Other TIP Benefits

In addition to benefiting the participating customers through lower utility bills and the non-participating customers by reducing the amount of subsidy that they would otherwise be required to provide participating customers, various other stakeholders would benefit from the TIP program as follows.

##### **New York State**

The reductions in energy consumption resulting from TIP-financed projects would free-up energy required to meet the State's growing energy demand, particularly in New York City, Long Island, and the Lower Hudson Valley. It would also relieve pressure on the transmission infrastructure used to deliver energy to areas of such increased demand. Energy prices for all could therefore be expected to decline, particularly at system peak times. Lower energy prices would be welcomed by all State residents, and would further the State's promotion of economic development and expansion.

Green collar jobs will be needed to perform the individual energy efficiency upgrades. It is estimated that 10 person-years of employment for installation alone, will be created for every \$1 million spent on energy retrofits, and that a further 3 to 4 person-years of employment will be created as part of the production of relevant materials.<sup>6</sup> TIP therefore strengthens the workforce of the local community, as these installation jobs are inherently local and will be abundant once the program begins. It also increases demand for energy efficiency products, thereby providing sustainable market conditions to promote new businesses in the state.

##### **Utilities**

The State's utility companies and their customers will benefit because reductions in energy demand will relieve congestion on delivery infrastructure, and thereby improve system reliability. Monies that would otherwise be allocated toward system improvements and additions could be reallocated to other social needs, such as economic development assistance or low income programs. Alternatively, by avoiding costly infrastructure investments, all of the State's ratepayers could benefit from decreased rates.

Utilities would not be financially disadvantaged by providing on-bill financing. Under the TIP program, adding financing charges on monthly service bills will

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<sup>6</sup> *Seizing the Opportunity (for Climate, Jobs, and Equity) in Building Energy Efficiency*, Rogers, J. November 2007, page 1.

not affect the company's balance sheet because it is acting merely as a pass-through. The utility would not be the guarantor of the customer's repayment obligation. In this respect, the TIP financing charges would operate similar to the current SBC. Rather, the lender would bear the ultimate risk except to the extent that adequate credit protection is provided by the ratepayers, the State or other sources. Since third party funding is being used, costs of capital for the program are minimal to the utility, causing no effects on its cash flow or debt capacity.

The program could also compensate the utilities for incremental administrative costs. An administrative charge would be included as part of the customers' financing repayment obligations. Alternatively, the state or a private administrative entity could provide funds for program setup and administration.

A utility's recovery of delivery service fixed costs is tied to its volumetric-based energy rate designs. It is therefore imperative that a mechanism be developed to help ensure that utilities and their shareholders are made whole for their legitimate costs of providing utility service to their customers despite any reduction in delivery revenues associated with the reduction in energy consumption. For example, a utility company's participation in TIP programs could be phased in to align with New York's PSC (NYPSC) approval of revenue decoupling mechanisms for the utility. A utility and its shareholders might also be eligible for NYPSC-approved incentives. Any resulting ratepayer impacts would be mitigated by the increased economic growth potential for utilities as a result of an improved environment for business location and expansion.

### **Private Investors**

Prudent investment in energy efficiency upgrades for buildings can earn investors attractive returns. It is estimated that efficiency savings on the order of 20-30% are easily achievable, and that savings on the order of 50-60% can also be achieved on a very cost-effective basis<sup>7</sup>. With 300 billion square feet of building space in America, there is a very large opportunity for the investment community<sup>8</sup>. These savings rates can be shared between the beneficiaries and investors so that investors earn attractive returns at low risk.

It is also estimated that 20-30% of efficiency improvements pay for themselves through realized savings in 3 to 5 years, and that a further 50-60% of improvements payback in 8 to 10 years<sup>9</sup>. Investor returns can therefore be realized on a relatively short timescale compared to other instruments.

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<sup>7</sup> *Seizing the Opportunity (For Climate, Jobs, and Equity) in Building Energy Efficiency*, Rogers, J. November 2007, page 1.

<sup>8</sup> Ibid.

<sup>9</sup> Ibid.

The projections on efficiency projects can be predicted and validated with good accuracy, and can be easily understood by potential investors. In fact, private capital is already being used for efficiency upgrades through the energy services company (ESCO) model. Many funds are increasingly looking for environmentally-friendly, or socially-responsible, investments as a component or requirement of their portfolios. Various public and labor pension funds have already demonstrated a willingness to invest in well-conceived investments that further legitimate societal and governmental objectives. These factors indicate that the appetite for energy efficiency investments is likely large.

## V. Conclusions

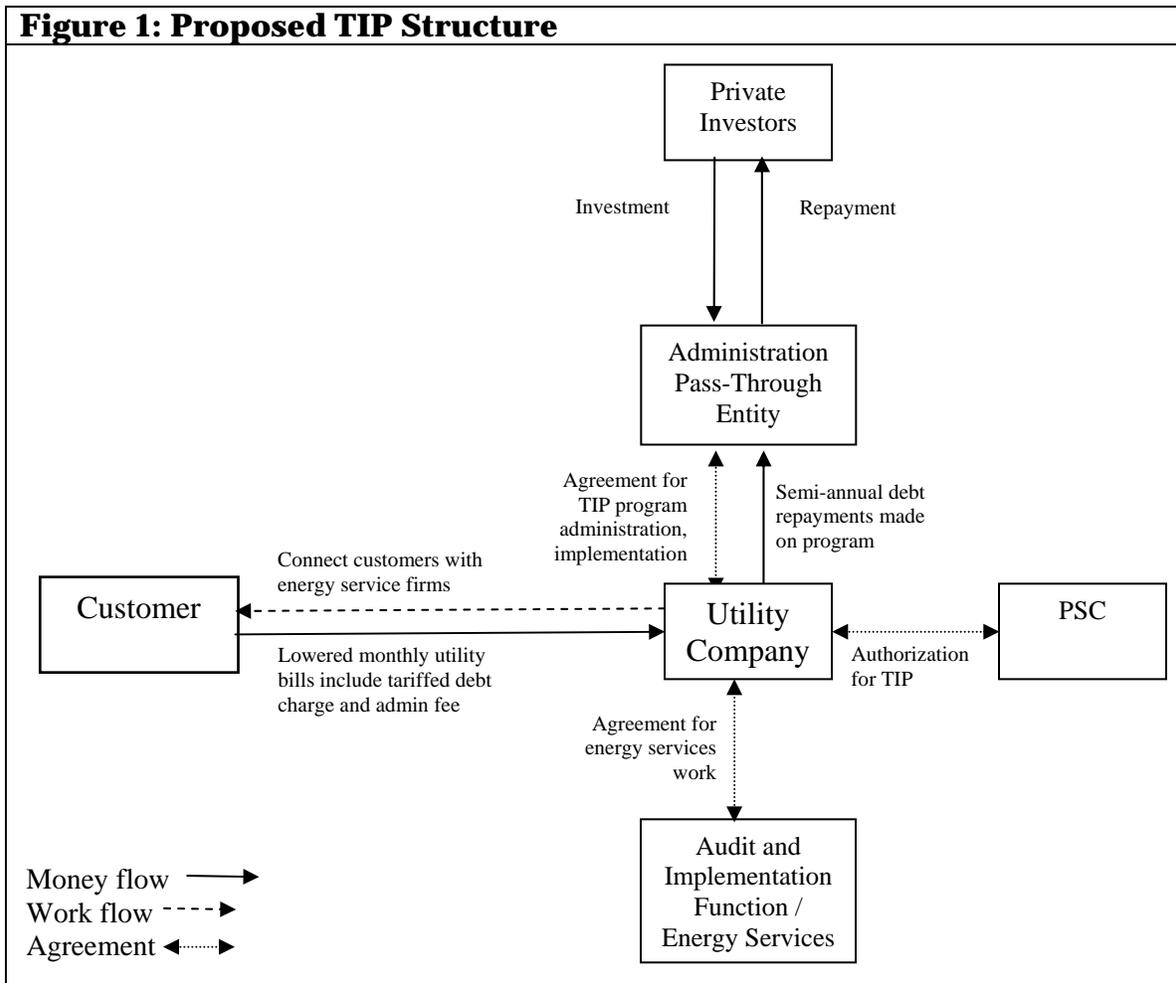
New York has compelling reasons to adopt the TIP program.

- The State has established one of the most aggressive electricity reduction goals in the country that cannot be achieved using subsidy-based programs alone;
- The State is the headquarters of the capital markets, with the financial expertise and resources to develop and implement fair and effective TIP programs;
- The State has one of the most expensive energy costs in the country and an aging energy delivery infrastructure that is pushing utility companies toward efficiency programs so they can accommodate growth and meet investor demands; and
- The State would benefit from an abundance of green collar jobs that will be created to complete the upgrade projects in the TIP program, and from the increased demand for new green technology that is being developed here.

The TIP program is the most transformative proposal to help the State meet its aggressive 15 by 15 energy reduction targets because it taps into the financial markets to fund the programs and relies on existing utility billing and collection mechanisms to deliver private capital. The model has been well-developed and well-received in other jurisdictions. Figure 3 shows existing and proposed models in several states, such as New Hampshire, Hawaii and Kansas, where on-bill financing is successfully established. Figure 4 shows data projected for a Milwaukee, Wisconsin program being developed, where straight paybacks on work to be performed are less than four years.

A TIP program can work effectively and meet the objectives of all stakeholders.

**Figure 1: Proposed TIP Structure**



**Figure 2: Sample Customer Utility Bill Showing Reduced Energy Usage, Central Hudson**

Electric		Meter # 12345678	Rate E100	NON HEATING
Electric Service Charges 1000 kWh at a cost of \$148.29				
Average Daily Cost for Electric \$2.4715				
<b>Amount of Electricity Used</b>				
07/30/2007	Present Reading (act.)			19886
05/30/2007	Previous Reading (act.)			18886
	<b>Electricity Used (kWh)</b>		<b>750</b>	<del>1000</del>
<b>Cost for Electricity Used (for 2.0 months)</b>				
<b>ENERGY DELIVERY CHARGES:</b>				
	Basic Service Charge		30.00	30.00
	Delivery Svc Chg	1000 kWh @ 0.03544	26.58	35.44
	MFC Admin Chg	1000 kWh @ 0.00145	1.09	1.45
	Transition Adj	1000 kWh @ 0.00001	.01	.01
	SBC/RPS	1000 kWh @ 0.00091	.68	.91
	Purch. Power Ad	1000 kWh @ -0.00276	-2.07	-2.76
	Misc. Charges	1000 kWh @ 0.00064	.48	.64
	<b>Total Delivery Chrgs</b>	<b>1000 kWh @ 0.06569</b>	<b>56.77</b>	<del>65.69</del>
<b>ENERGY SUPPLY CHARGES:</b>				
<b>(You may choose another supplier for this part of your service)</b>				
	MFC Supply Chg	1000 kWh @ 0.00176	1.32	1.76
	Market Price	1000 kWh @ 0.07562	56.72	75.62
	Market Price Adj	1000 kWh @ -0.00043	-.32	-.43
	<b>Total Supply Chrgs</b>	<b>1000 kWh @ 0.07518</b>	<b>57.72</b>	<del>76.95</del>
	NYS & Local Taxes & Surcharge		4.24	5.65
	<b>TOTAL ELECTRICITY COST</b>			<del>\$148.29</del>
For this billing period, the average cost of energy which we purchased for delivery to you was \$0.07695 per kWh (excluding taxes). You can use this number to compare our price to other suppliers' prices.				
<b>ENERGY EFFICIENCY UPGRADE CHARGE:</b>			<i>New charge during renovation period only</i>	<b>5.50</b>
<b>TOTAL ELECTRICITY COST:</b>			<i>Ongoing lower bills</i>	<b>\$124.23</b>

NOTE: Estimates were provided by Harlan Lachman and Paul Cillo of the Energy Efficiency Institute, Inc.

<b>Figure 3: Other On-Bill Financing Programs</b>						
<b>Entity</b>	<b>Public Service of New Hampshire*</b>	<b>New Hampshire Electric Coop*</b>	<b>3 Hawaiian Electric Company utilities*</b>	<b>Midwest Energy, Kansas*</b>	<b>Milwaukee WI (Pending)*</b>	<b>New York Power Authority</b>
<b>Program Funding Source</b>	Utility-funded	Utility-backed loan from primary lender / operating funds	Utility-funded	Utility-funded	Municipal bond or pension	NYPA
<b>Funding Type</b>	Revolving SBC capital fund	Pooled funds	Revolving SBC capital fund	Revolving SBC capital fund	Bond or pension funds	NYPA debt
<b>Operating Entity</b>	Utility	Utility	Utility	Utility	Municipalities	Public Benefit Corp.
<b>Repayment Method</b>	Tariffed charge on utility bills with disconnection for non-payment	Tariffed charge on utility bills with disconnection for non-payment	Tariffed charge on utility bills with disconnection for non-payment	Tariffed charge on utility bills with disconnection for non-payment	Tariffed charge on utility bills with disconnection for non-payment	Charges on utility bills
<b>Credit Backstop</b>	SBC revolving fund	Ratepayers	SBC revolving fund	SBC revolving fund	Utility covers bad debt	NYPA obligation
<b>Energy Services Provider</b>	Any independent contractor willing to be certified	Any independent contractor willing to be certified	Contractors already certified in HECO's solar program	Any independent contractor willing to be certified	Under review	NYPA and their consultants
<b>Guarantee</b>	Contractor bonding, extended warranty, payments stop on relocation or measure failure	Contractor bonding, extended warranty, payments stop on relocation or measure failure	Contractor bonding, extended warranty, payments stop on relocation or measure failure	Contractor bonding, payments stop on relocation, landlord responsible for repairs	Contractor bonding, guarantee surcharge, payments stop on relocation or measure failure if not repaired	N/A
<b>Type of Buildings</b>	Municipal / tax-exempt retrofits, lighting, and HVAC; street light retrofit	Residential (gas-heated) compact fluorescent lights; small commercial	Residential solar hot water for single and multi-family	Multi-family retrofit	Comprehensive residential retrofit	NYPA customers
<b>Status</b>	<b>Active</b>	<b>Active</b>	<b>Active</b>	<b>Active</b>	<b>Proposed</b>	<b>Active</b>

\*NOTE: Information was provided by Harlan Lachman and Paul Cillo of the Energy Efficiency Institute, Inc.

<b>Figure 4: Data developed for On-Bill Financing Programs in Milwaukee, Babylon</b>	
	<b>Milwaukee, WI Residential Program</b>
<b>City population</b>	600,000
<b>Average cost for efficiency upgrades</b>	\$1,200 / residence
<b>Estimated total cost of program</b>	\$243 million
<b>Estimated annual savings</b>	\$83 million
<b>Resulting payback period minus debt and administration costs</b>	2.9 years
<b>Green collar jobs created</b>	2,400 (10 jobs / \$1 million program)

NOTE: Information was provided by Harlan Lachman and Paul Cillo of the Energy Efficiency Institute, Inc.

**References**

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6. Process Evaluation of the Pilot "Pay As You Save" (PAYS) Energy Efficiency Program, GDS Associates, December 2003