

## DEVELOPMENT OF AN URBAN WATER CONSERVATION REGULATORY PROGRAM

Comments for the California State Water Resources Control Board

Edwin Orrett, PE • September 23, 2008

The interest of the State Water Board in more fully developing water and energy savings available through urban water conservation is commendable. It is well known that while the economic, environmental, and social advantages of this approach are compelling, it is underused. To the extent that cost-effective resource savings remain untapped, Californians as a whole, and others due to wide environmental consequences, will pay a dear price.

These comments begin with the opinion that it is imperative for many reasons, including total financial cost and climate concerns, that we improve our collective ability to reduce municipal water demand. In terms of how the State Water Board can beneficially effect this outcome, these comments will step back slightly from regulatory details that others are better placed to advise upon, and consider in a larger sense key strategies that might make it easier for water purveyors to fulfill new standards. It is likely that the State Water Board has considerable opportunity to develop highly productive carrots to go with its stick.

Conservation performance by resource utilities has always lagged behind its economic potential. This may have more to do with market barriers than with the level of effort. While it is useful to raise the pressure to perform, may be even more useful to develop better tools with which to do the job.

Examples include:

- Assist in introducing a high performance implementation system for conservation measures that is specifically designed to overcome all key market barriers
- Expand the role of low-cost revolving loan funds to include cost-effective conservation measures (to be repaid by beneficiaries)
- Demonstration projects to overcome first-mover anxiety; information sharing
- Investigate providing GHG emissions credit for water purveyors who enable reductions on the customer's side of the meter (where most GHG emissions in the municipal water cycle occur)
- Help to address "revenue erosion" concern, perhaps by publishing a study that evaluates the lifecycle costs of alternative development scenarios (for water utilities alone, and perhaps also with related energy and wastewater infrastructure costs)
- Continue funding high quality performance measurements (e.g., energy and water savings, job creation, cost-effectiveness)

The most important of the strategies above is the first, for it has the potential to be a game-changer. At present utility rates seen by many water customers (more specifically, the volumetric rates paid by customers for water, wastewater, natural gas (or propane), and electricity) are high enough to make many water conservation measures highly cost-effective. This is even more the case when marginal costs are considered. However, hardly any end users are "rational actors" in the economic sense, and

collectively, enormous savings are left on the table. Consequently, rebates are offered, often at high levels and with Herculean promotional effort, but still progress is gradual. CUWCC's participation requirements, developed with considerable experience, reflect this.

Nancy Brockway, formerly a member of the New Hampshire PUC, has considerable experience with this issue. In a recent presentation to the National Association of Regulatory Utility Commissioners, she reviewed key issues for implementing water utility conservation measures and how to mitigate them.<sup>1</sup> The most immediately relevant points of her presentation are copied below.

#### **What are the market barriers?**

- High first costs, and competition for capital
- Customer can't/won't incur more debt
- Concerns lifetime savings will not materialize
- Transaction hassles exceed expected benefit
- Uncertainty about duration of occupancy
- Split incentives
  - E.g., builders, developers, landlords control plumbing and toilet choices - want cheapest units with fewest call backs - but tenant pays water bills

#### **How to overcome the market barriers?**

- Lower/eliminate first cost
- Eliminate debt obligation
- Remove efficiency choice hassles
- Marry obligation to benefits, not to individual
- Only require payment if end use works as promised
- Have independent certification of measure quality

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<sup>1</sup> Source: "Overcoming Market Barriers to Water DSM: Leapfrogging to Excellence," a presentation to the NARUC Water Staff Subcommittee by Nancy Brockway, Director, Multi-Utility Research and Analysis, NRRl, at NARUC Summer Meetings (Portland, Oregon: July 2008). Available at: <http://www.narucmeetings.org/Presentations/Overcoming%20Water%20DSM%20Market%20Barriers%20as%20shown.ppt>

- Allow tenant/purchasing manager to reap benefits, without committing to pay beyond time of benefit

#### Put it all together

- Provide money-saving resource efficiency measures
- With no up-front payment, and
- No customer debt obligation

The customer pays a utility tariff that is always less than estimated savings and is payable only if the measure is working and they remain at the location

The only system presently available that includes all these attributes is called Pay As You Save<sup>®</sup>, or PAYS<sup>®</sup> (this is trademarked, like EnergyStar<sup>®</sup>, to preserve system integrity). This is being used to deliver electric/multi-resource savings in New Hampshire, and residential solar water heaters in Hawaii. A two-page outline about PAYS<sup>®</sup> is appended to these comments.

The PAYS<sup>®</sup> approach is designed to create a vibrant marketplace for efficiency products. The economic effect is generally indicated on the following page. Specific advantages are likely to include things such as:

- Significant reduction in utility funds needed for rebates and conservation staff, thus improving ratepayer equity
- Ability to serve renters as easily as building owners; developers too (for example to fund design/construction services for structured plumbing and other features whose opportunity is otherwise lost)
- Virtually eliminate boom/bust cycle as program funds come and go
- Focus on measures that maximize lifecycle value (more important under this approach than low first cost)
  - Corollary to the above: with a utility-scale market for excellent products, the RD&D cycle can be accelerated to serve it

A system such as that above is designed around cost-effectiveness, both for the end user, and for the utility (which may choose to provide rebates to the extent measures are cost-effective for the utility, but not the customer... something that happens when marginal costs are apparent only to the utility). The effect is enhanced to the extent the provisions of CUWCC's BMP 11 are followed (both for water and associated wastewater utilities).

Pro forma analyses indicate this approach can support high levels of water conservation. These analyses were made possible by unit energy and water use data developed following considerable effort by the CUWCC, AWWARF, California Energy Commission, and others. This work has also been enhanced by

data being developed due to attention given to global climate change. None of this was available until recently.

We are now called to respond to extraordinary pressures. Thank you for the opportunity to offer comments regarding this important and challenging work.

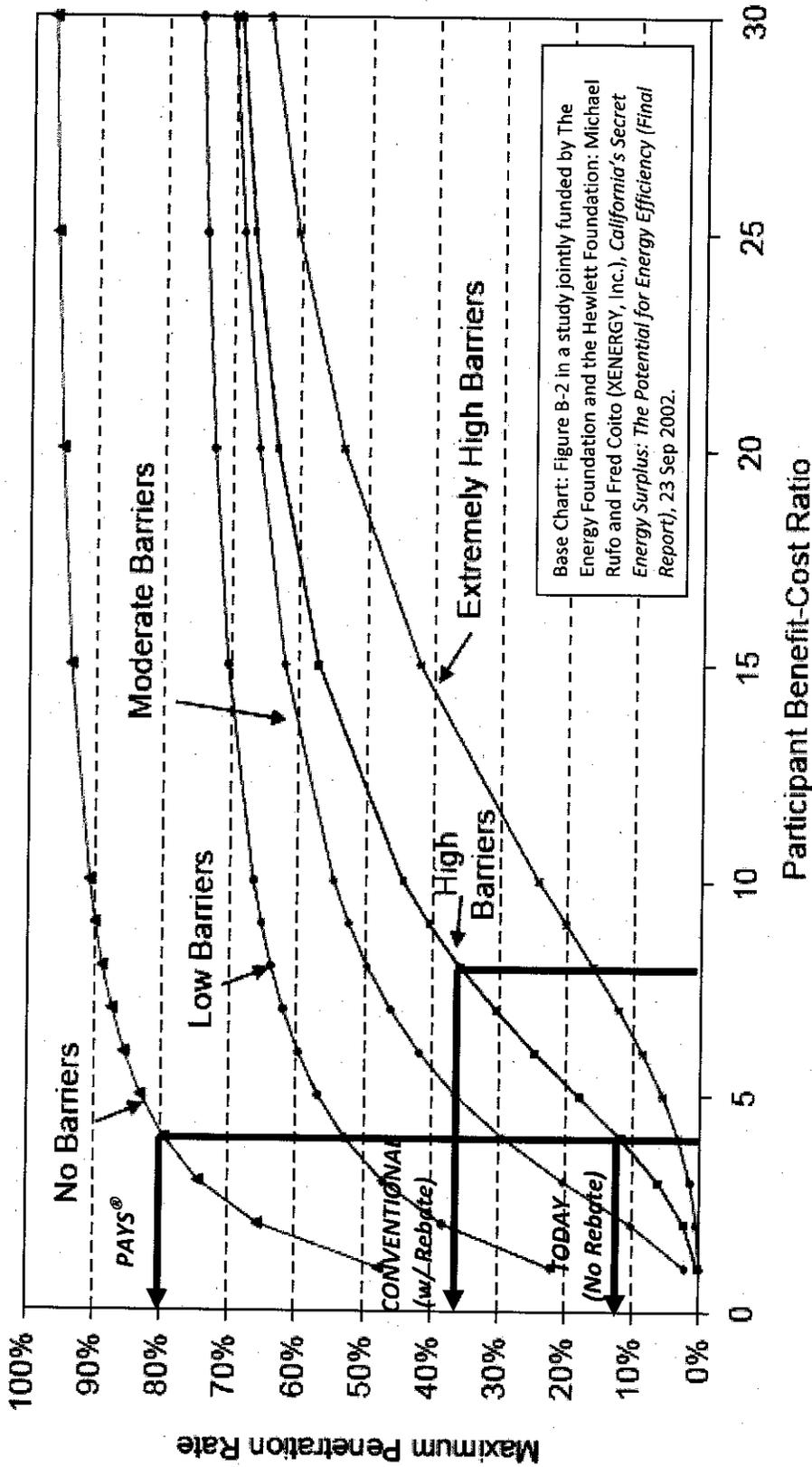
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# Relative Participation for Different Market Interventions



- TODAY: High market barriers restrict purchase of highly cost-effective efficiency measures
- CONVENTIONAL: Public funds are offered to reduce the initial cost of measures. This improves participation, but barriers remain to retard sale of cost-effective efficiency measures.
- PAYS: Comprehensively removes market barriers. Customers chose to purchase cost-effective measures with less need for a financial incentive

# Pay As You Save<sup>®</sup> (PAYS<sup>®</sup>)

## Barriers to Efficiency & Climate Change Improvements

The marketplace for resource efficiency products, even when stimulated by rebate programs, is rife with market barriers that inhibit many consumers and businesses from buying them:

- Lack of capital (or competing demands for capital);
- Limited debt capacity (or need to preserve it);
- Uncertainty about length of occupancy;
- Risk that measures may fail before savings pay for measure cost; and
- Building owner is not the bill payer (e.g., new development or rental property).

Public funds for efficiency and climate change programs are limited. Limited program budgets can actually dampen the market for efficiency products when they are oversubscribed.

## PAYS<sup>®</sup> : Designed to Eliminate Barriers

Pay As You Save<sup>®</sup> (PAYS<sup>®</sup>) is a market based system that eliminates these barriers to the purchase and installation of proven, cost effective energy efficiency measures. PAYS<sup>®</sup> is trademarked like Energy Star<sup>®</sup> to preserve program integrity.

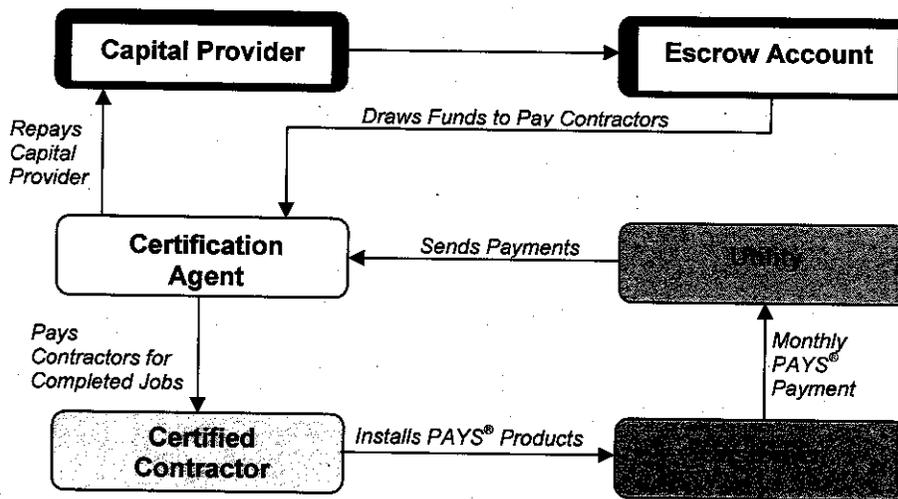
1. PAYS<sup>®</sup> eliminates the barriers that have kept customers from purchasing efficiency products and saving money. PAYS<sup>®</sup> customers have:
  - No up-front payment, no debt obligation, no credit checks, no liens;
  - A guarantee that their monthly charge is lower than their estimated savings;
  - The assurance they will pay only while they remain at the location; and
  - A promise that failed measures will be repaired or the payment obligation will end.
2. PAYS<sup>®</sup> assigns bill-paying responsibility to a meter location rather than to an individual customer. Since customers assume no new debt when they buy PAYS<sup>®</sup> products, the approval process for customers such as public or private facilities managers is simplified. Successive customers at that location pay the PAYS<sup>®</sup> charge and benefit from the savings.
3. The monthly tariffed charge is always lower than the estimated savings from the PAYS<sup>®</sup> product. The charge remains on the bill for that location until all the costs are recovered. This means tenants or anyone uncertain about the duration of their occupancy can purchase PAYS<sup>®</sup> products assured they will receive savings that exceed their payments during their occupancy.
4. Third party capital pays the upfront costs for PAYS<sup>®</sup> products. Because PAYS<sup>®</sup> offers a solid investment opportunity, it attracts sufficient capital to meet demand. PAYS<sup>®</sup> can also be used to enhance current efficiency programs, making them available to more types of customers while producing more efficiency with available funding.

**PAYS® System Requirements**

- A capital provider to fund the up-front costs of the measures;
- A certification agent to certify that PAYS® products will result in sufficient savings to cover the costs of installation, financing and management fees, and still deliver net savings;
- A utility to bill PAYS® charges, collect payments from customers with PAYS® products, and forward the funds to the certification agent who repays the capital provider; and
- A PAYS® tariff to enable a utility to bill customers for PAYS® products at the location where they were installed.

**Roles and Responsibilities**

The roles and responsibilities in the PAYS® system are as follows:



<p style="text-align: center;"><b>Certification Agent</b></p> <ul style="list-style-type: none"> <li>• Contracts with certified contractors and customers</li> <li>• Certifies products as PAYS® products</li> <li>• Contracts with utility so it may authorize PAYS® tariff at installation location</li> <li>• Collects payments from Utility and forwards to capital provider</li> </ul>	<p style="text-align: center;"><b>Utility</b></p> <ul style="list-style-type: none"> <li>• Implements tariff at locations when notified by Certification Agent</li> <li>• Bills and collects payments from customers with PAYS® products</li> <li>• Sends Certification Agent payments equal to monthly billed PAYS® charges</li> <li>• Notifies successor customers of PAYS® obligations upon application for service</li> </ul>
<p style="text-align: center;"><b>Certified Contractor</b></p> <ul style="list-style-type: none"> <li>• Markets PAYS® products</li> <li>• Identifies qualifying products</li> <li>• Applies to Certification Agent to qualify PAYS® products</li> <li>• Installs products and is paid by Certification Agent upon successful installation</li> <li>• Can finance installations</li> </ul>	<p style="text-align: center;"><b>Customer</b></p> <ul style="list-style-type: none"> <li>• Contracts with Certification Agent to buy certified PAYS® products</li> <li>• Pays monthly charges as long as they remain at the premises and product functions</li> <li>• Realizes net savings</li> <li>• If owner, obligated to notify successor customers about PAYS®</li> </ul>