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ENERGY EFFICIENCY AND RENEWABLE ENERGY FINANCING DISTRICTS

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An economic transition is needed to a low-carbon, sustainable, and job producing model. In that process, improving commercial and residential building energy efficiency is vital given than structures are the site of more than 70 percent of the electricity use[1] and almost 40 percent of greenhouse gas emission[2] in the United States.

A novel and integrative way to achieve the goal is to establish more stringent laws to reduce energy use in buildings, improve energy efficiency and the potential use of renewable energy such as solar photovoltaic and solar systems. Regulatory approaches have proven useful and will need to be continued.

Many barriers oppose the reduction energy consumption, the main one is the high cost of investment needed for this happen.

Our research group from the University of California, Berkeley, has developed a way to overcome the financing barriers. The Energy Financing Districts were first proposed by the City of Berkeley, California in 2007: they then received an increasing attention as a mechanism for financing residential or commercial clean energy projects.

The Energy Financing District enables the local governments to raise money through the issuance of bonds to fund these clean energy projects. The financing is repaid over a set number of years through a "special tax" or assessment on the property tax bill of property owners, who choose to participate in the program. The financing is secured with a lien on the property, and then if the property is sold before the end of the repayment period, the new owner inherits both the repayment obligation and financed improvements[3].

This model was applied in four areas: City of Berkeley, CA; Palm Desert, CA; Boulder County, CO and Babylon, NY. The program has taken a different approach according to the design in each case for each area.

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[1] Building Technologies Program, 2007 Buildings Energy Data Book (Washington, DC: Office of Energy Efficiency and Renewable Energy, U.S. Department of Energy, September 2007).
[2] Energy Information Administration (EIA), EIA 2006: Emission Gases in the United States, DOE/EIA-0579 (Washington, DC 2006).
[3] Guide to Energy Efficiency & Renewable Energy Financing Districts – for local governments, September 2009 (REAL, renewable and appropriate energy laboratory by Merrian C. Fuller, Cathy Kunkel, Daniel Kammen).

The below table (Tab.1) shows the case studies:

Table.1 CASE STUDY COMPARISON CHART

	PROGRAM LAUNCHED	POPULATION DENSITY HOUSING UNITS % RENTAL UNITS	SOURCE OF CAPITAL	FINANCING MECHANISM	COLLECTION MECHANISM	ELIGIBLE MEASURE	RESULT AS OF AUGUST 2009
BERKELEY	Nov 2008	110,000 pp 9,800 pp/sqmi 46,600 units 54% rental	Micro bond sold to financial partner	Special tax (Mello-Ross)	Property tax bill	Solar PV	38 projects $28,000 ave/per $1M committed
PALM DESERT	Oct 2008	51,000 pp 1,600 pp/sqmi 33,500 units 34% rental	City's general fund for Phase I, then Redevelopment Agency Bond, now seeking a financing partner for Phase III	Assessment (AB 811)	Property tax bill	Energy efficiency, solar thermal, solar PV	206 projects $36,000 ave/per $7,5M committed
BOULDER COUNTY	April 2009	300,000 pp 400 pp/sqmi 123,000 units 34% rental	Country issues bonds	Assessment (HB 08-1350)	Property tax bill	Energy efficiency and variety of renewables	393 projects $19,000 ave/per $7,5M committed
BABYLON	August 2009	220,000 pp 4,100 pp/sqmi 74,000 units 20% rental	Municipal solid waste revolving fund	Assessment (amended solid waste code)	Separate bill, transfer to property tax bill if delinquent	Energy efficiency, solar thermal, solar PV	169 projects $7,100 ave/per $1,2M committed

Conclusion

Energy Financing District programs can given cities and states the tools to lead the charge for improving energy efficiency and usage of renewable energy. Programs like the City of Berkeley, "Berkeley FIRST" (Financing Initiative for Renewable and Solar Technology), have the potential to increase the accessibility and affordability of energy saving measures.

Implementing these programs enable several benefits in terms of emissions reductions, job creation, improved energy performance, as well as better local economics.