

# “SEU 101”

## PRESENTATION TO DELAWARE SUSTAINABLE ENERGY UTILITY OVERSIGHT BOARD

John Byrne  
Center for Energy and  
Environmental Policy  
University of Delaware

Trenton Allen  
Vice President  
Public Finance Department  
Citi

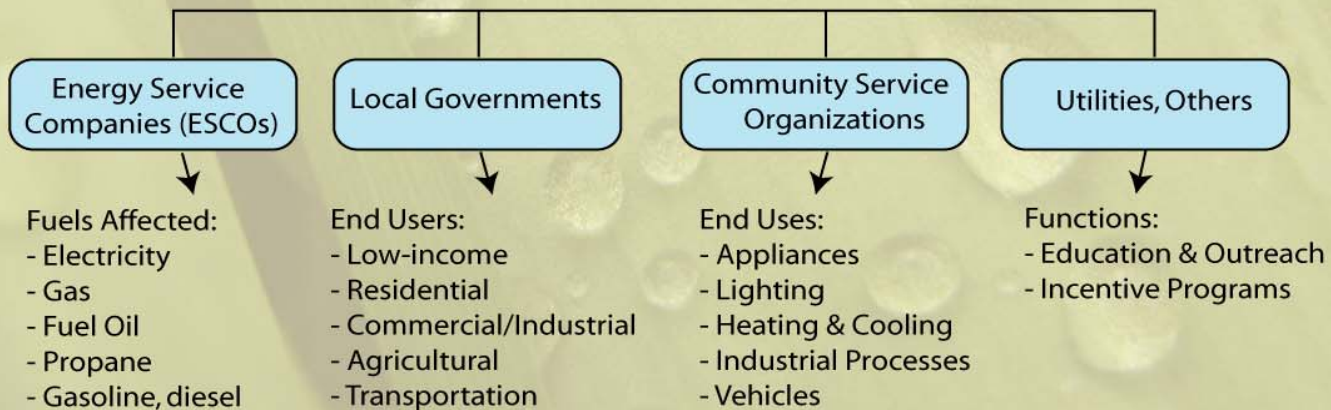
February 3, 2009

# THE SUSTAINABLE ENERGY SPACE

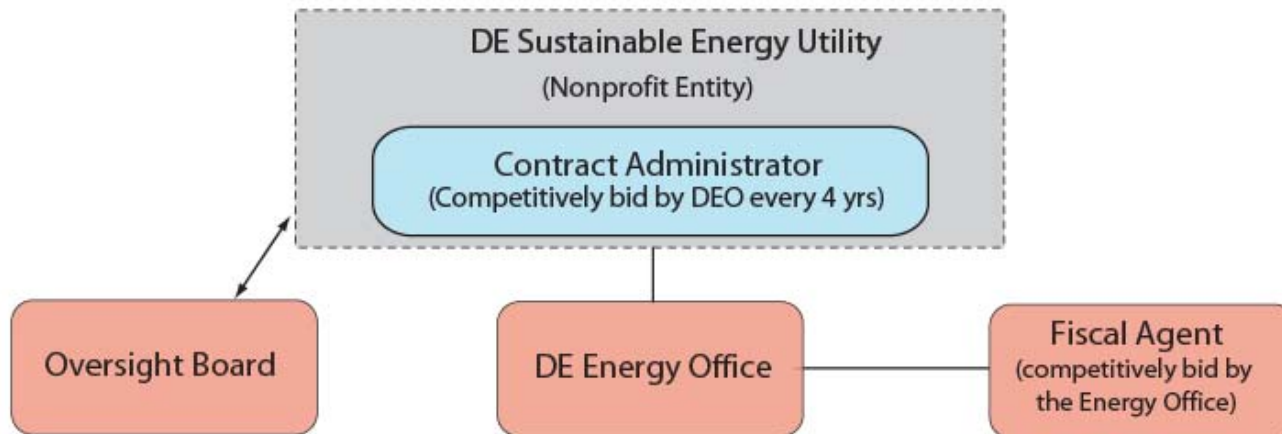


## SUSTAINABLE ENERGY UTILITY

### IMPLEMENTATION



# THE SUSTAINABLE ENERGY SPACE



# SEU 101

[T]HE CHEAPEST, FASTEST, CLEANEST, SUREST  
LEVERAGE AGAINST CO<sub>2</sub> EMISSIONS IS TO INCREASE  
THE EFFICIENCY OF ENERGY USE, AND THE  
POTENTIAL FOR DOING A LOT OF THIS IS LARGE.

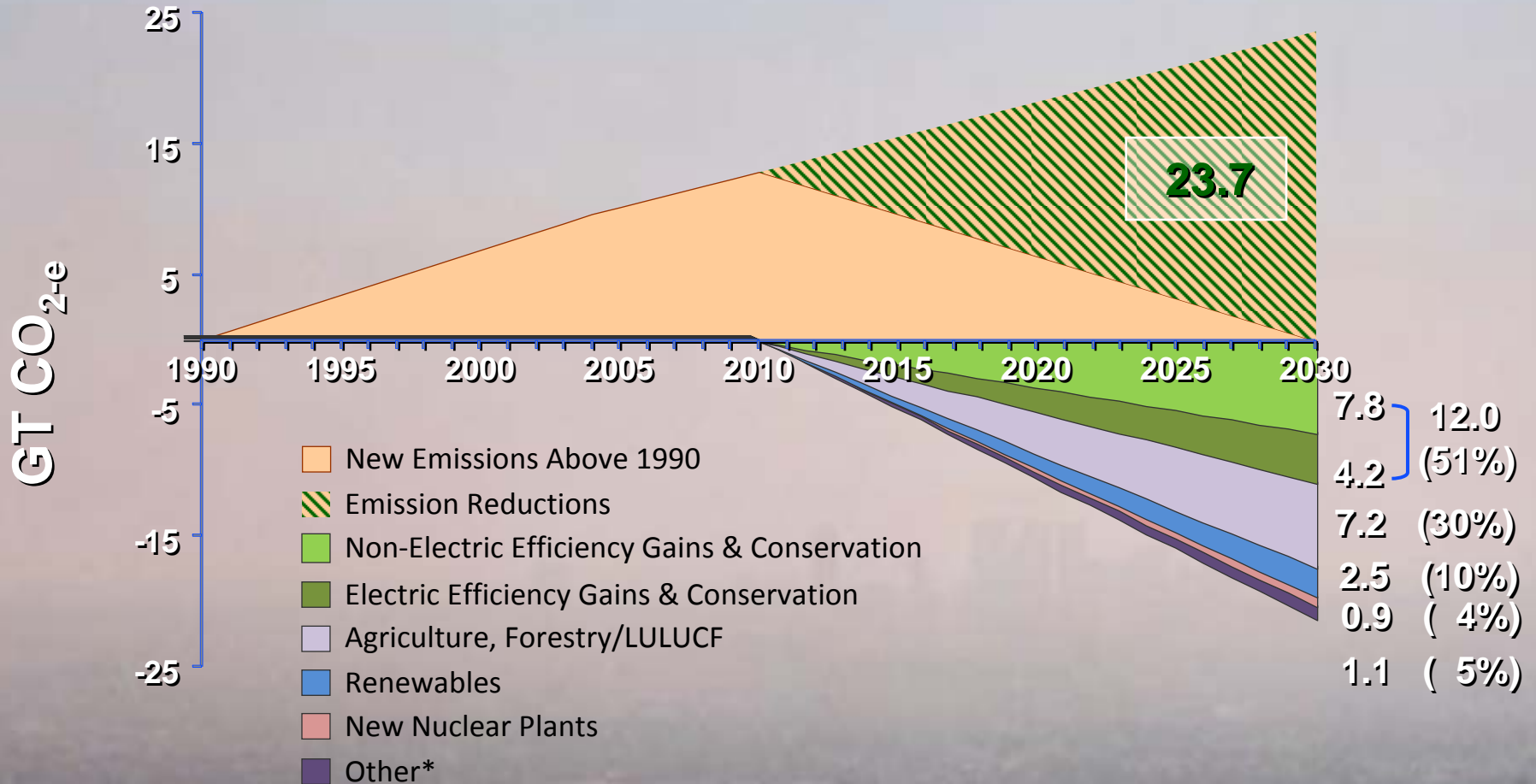
John P. Holdren  
Formerly Heinz Professor of Environmental Policy &  
Professor of Earth and Planetary Sciences, Harvard University; President and  
Director, The Woods Hole Research Center;  
Chair of the Board, American Association for the Advancement of Science

January 17, 2008  
Lecture at National Council for Science and Environment

President Barack Obama picks Dr. Holdren for  
White House Science Advisor

January, 2009

# IPCC Assessment of Principal Mitigation Options

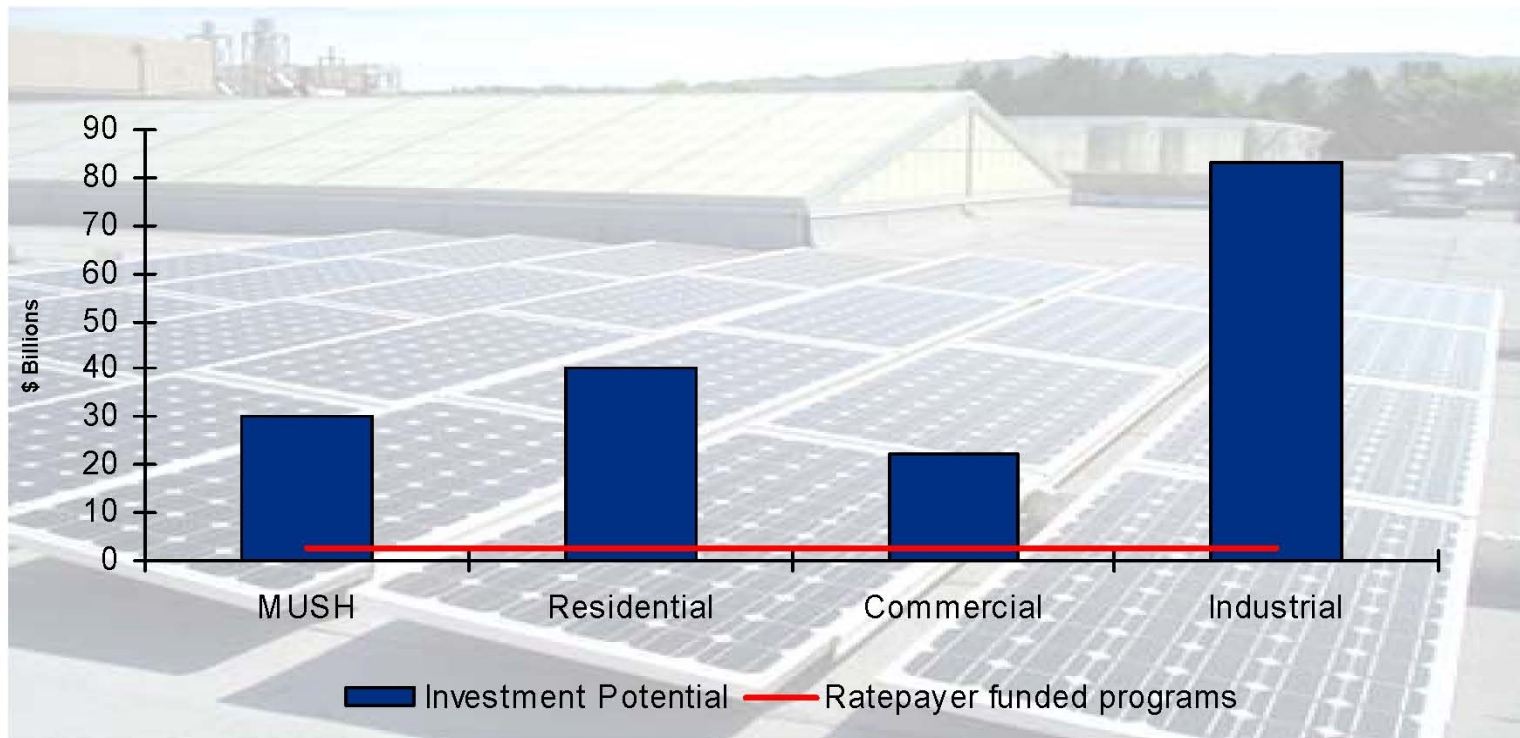


\* Other includes 1.1 Gt CO<sub>2-e</sub> reduced through several options including: CCS; Waste and Wastewater Management.

Source: IPCC 2007. Fourth Assessment Report, WG III Report, Mitigation of Climate Change.  
Supporting Sources: Olivier et al 2006, 2005, WBCSD 2004.

# Seizing the Energy Efficiency & Distributed Renewables Potential

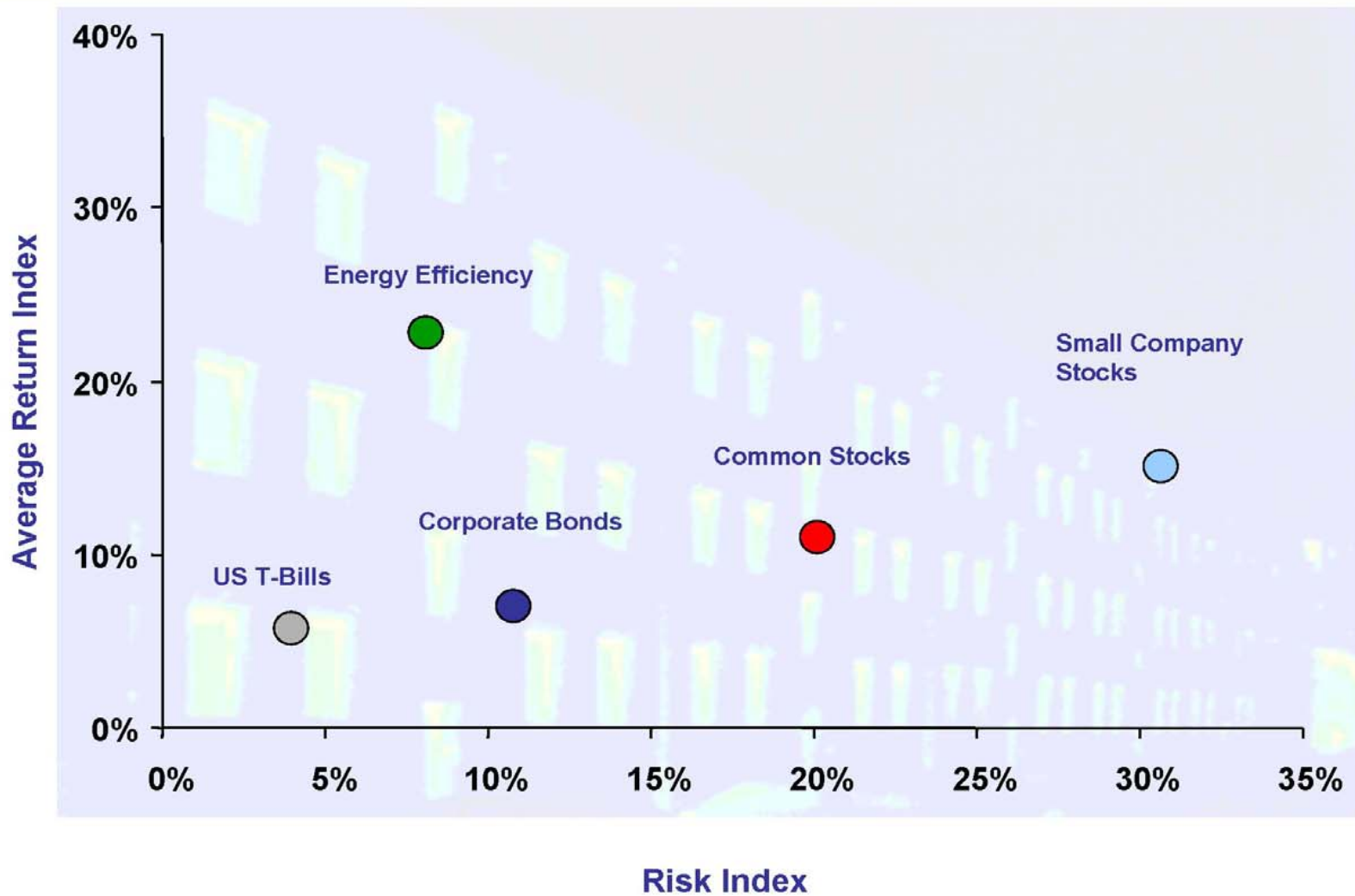
Investment needs are staggering



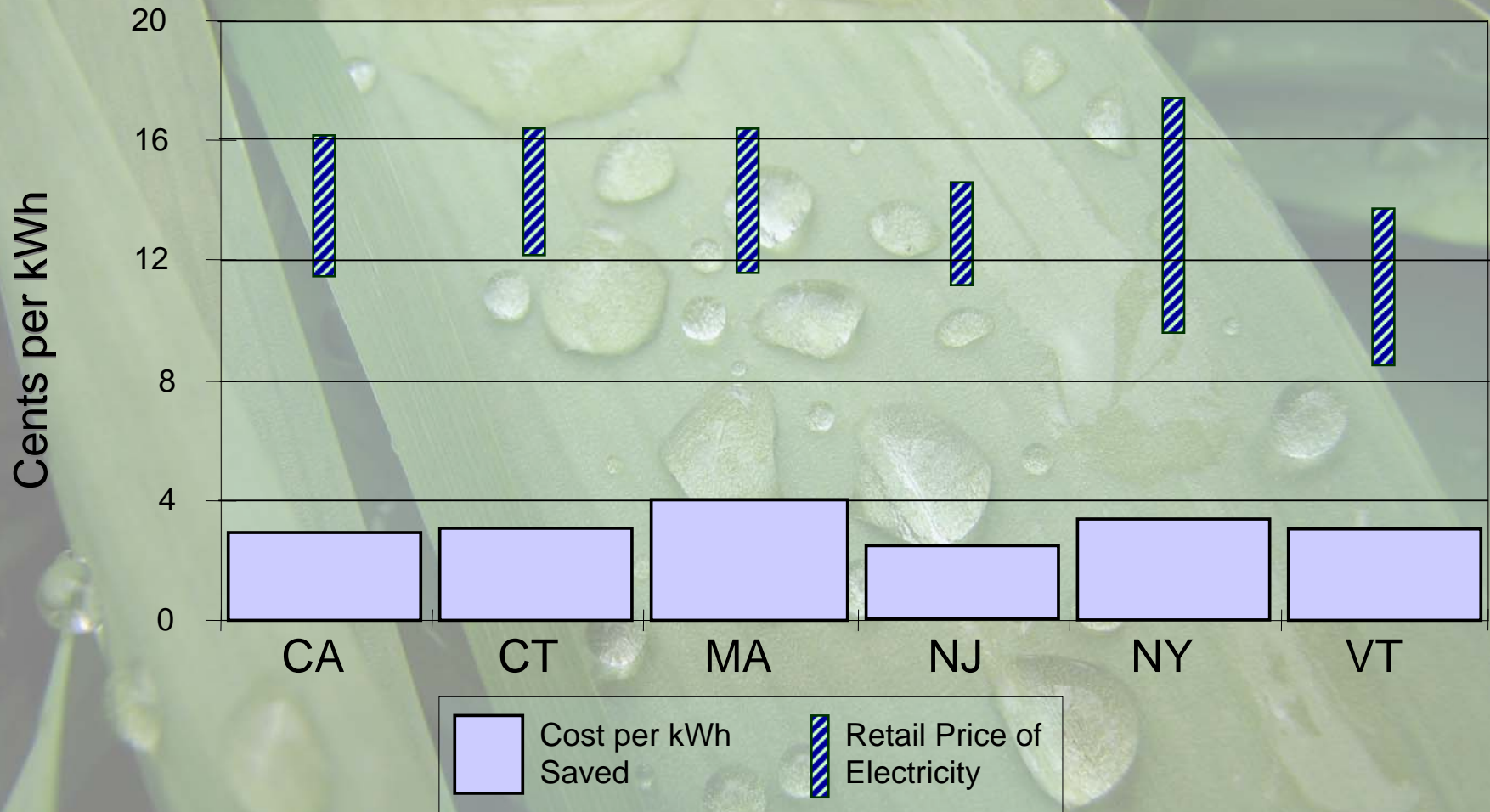
Source: McKinsey Global Institute, The Case for Investing in Productivity

8 Berkeley National Laboratory, "A Survey of the US ESCO Industry: Market Growth and Development from 2000 to 2006"

## Comparative Risk / Return of Typical Investments



# U.S. Cost per kWh Saved versus kWh Supplied



Source: Delaware Sustainable Energy Utility Task Force (2007)

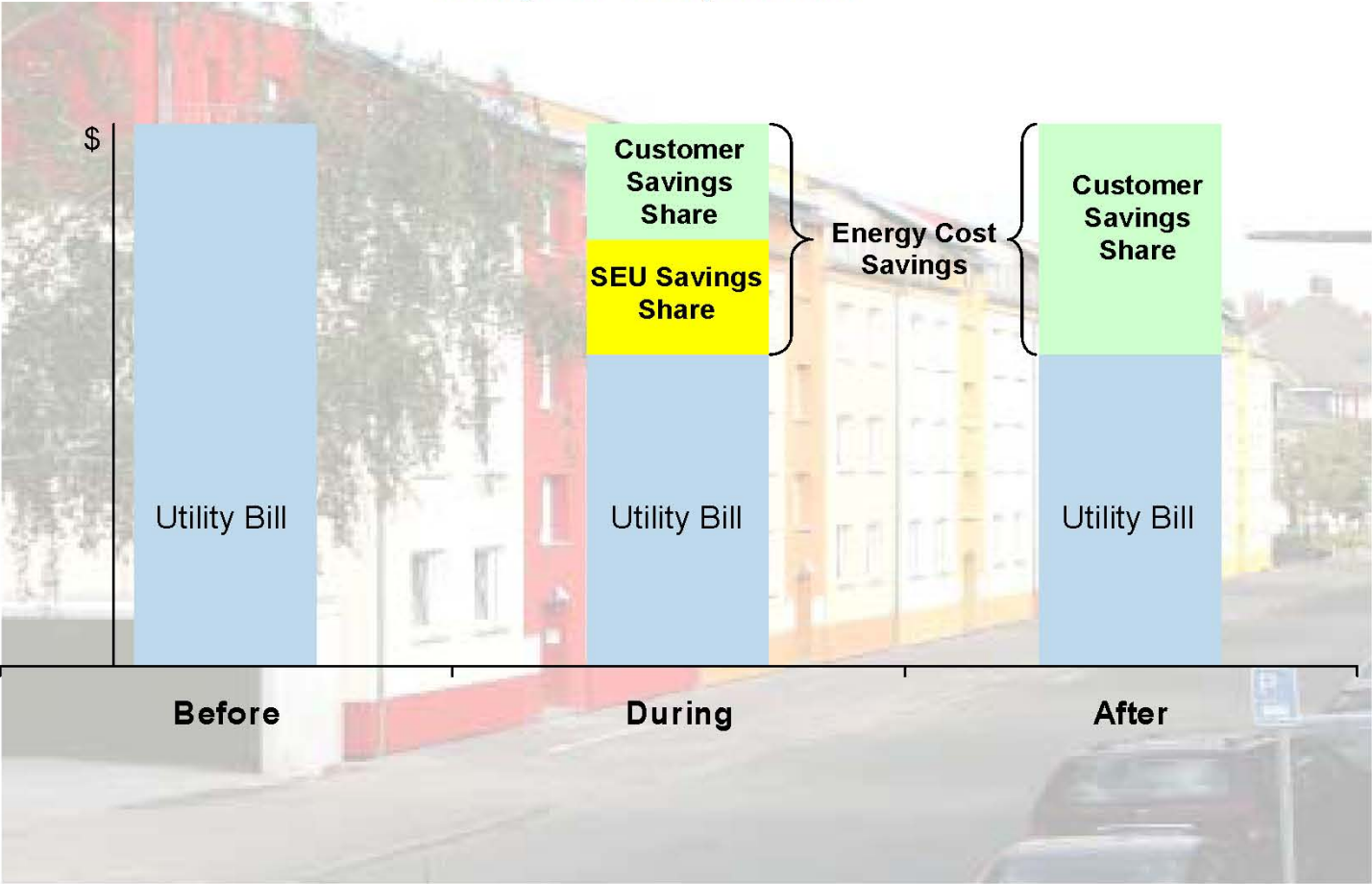
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# Green Energy Contracting

### Utility Bill Comparisons



- DEEMED SAVINGS

- GUARANTEED SAVINGS

- VENDOR INCENTIVES

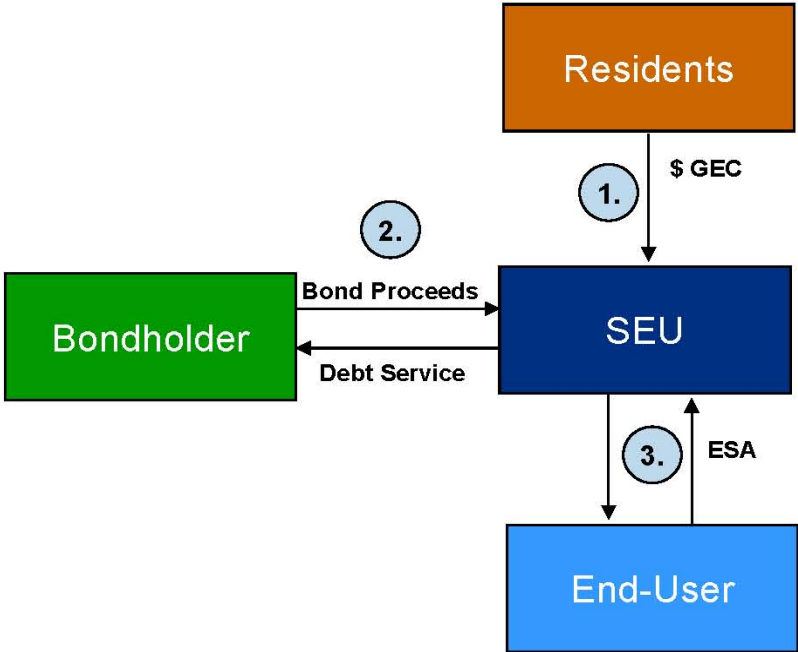
- CONSUMER INCENTIVES

# REGIONAL GREENHOUSE GAS INITIATIVE

- QUARTERLY AUCTIONS
- 65% OF AUCTION PROCEEDS TO DE SEU
- 15% OF AUCTION PROCEEDS TO DE WEATHERIZATION ASSISTANCE PROGRAM

# Securitized Green Bonds (SGBs)

Green Energy Charge (GEC) provides security for SGBs and allows for non-MUSH energy projects



- 1. SEU and Municipality establish a Green Energy Charge (GEC) which is applied to all energy users
- 2. SEU issues tax-exempt bonds for purpose of providing energy demand reduction grants
- 3. SEU enters into Energy Service Agreement with end-user for energy projects

.....

**Optional**

In connection with the ESA, End-User may enter into Energy Services Performance Contract with an approved ESCO



# Federal Economic Stimulus Funds

American Recovery and Reinvestment Act of 2009  
(US House version – Billion \$)

<b>ENERGY EFFICIENCY &amp; CONSERVATION</b>	<b>\$22.5</b>
Weatherization Assistance Program Grants	\$6.2
Smart Grid Investment Program	\$4.5
Energy Conservation & Efficiency Block Grants	\$3.5
State Energy Program Grants	\$3.4
Qualified Conservation Bonds	\$2.4
Institutional Entities – Grants & Loans	\$1.5
Other (incl. Energy Star, Industrial Efficiency)	\$1.0

# Energy Efficiency Improvements Produce Results

Organizations have already begun to take advantage of Energy Efficiency Savings

## Chicago Housing Authority

<b>Investment</b>	\$30 million
<b>Savings</b>	\$36 million
<b>% Savings</b>	20%
<b>ESCO</b>	Ameresco
<b>Project</b>	Decentralized steam plant



## Charleston Air Force Base

<b>Investment</b>	\$9.2 million
<b>Savings</b>	\$800,000/yr
<b>% Savings</b>	40%
<b>ESCO</b>	Ameresco
<b>Project</b>	Underground heat plants



## Allegheny County, PA

<b>Investment</b>	\$8.9 million
<b>Savings</b>	\$13.7 million
<b>% Savings</b>	53%
<b>ESCO</b>	Noresco
<b>Project</b>	Building Retrofits



## University of Massachusetts Medical Center

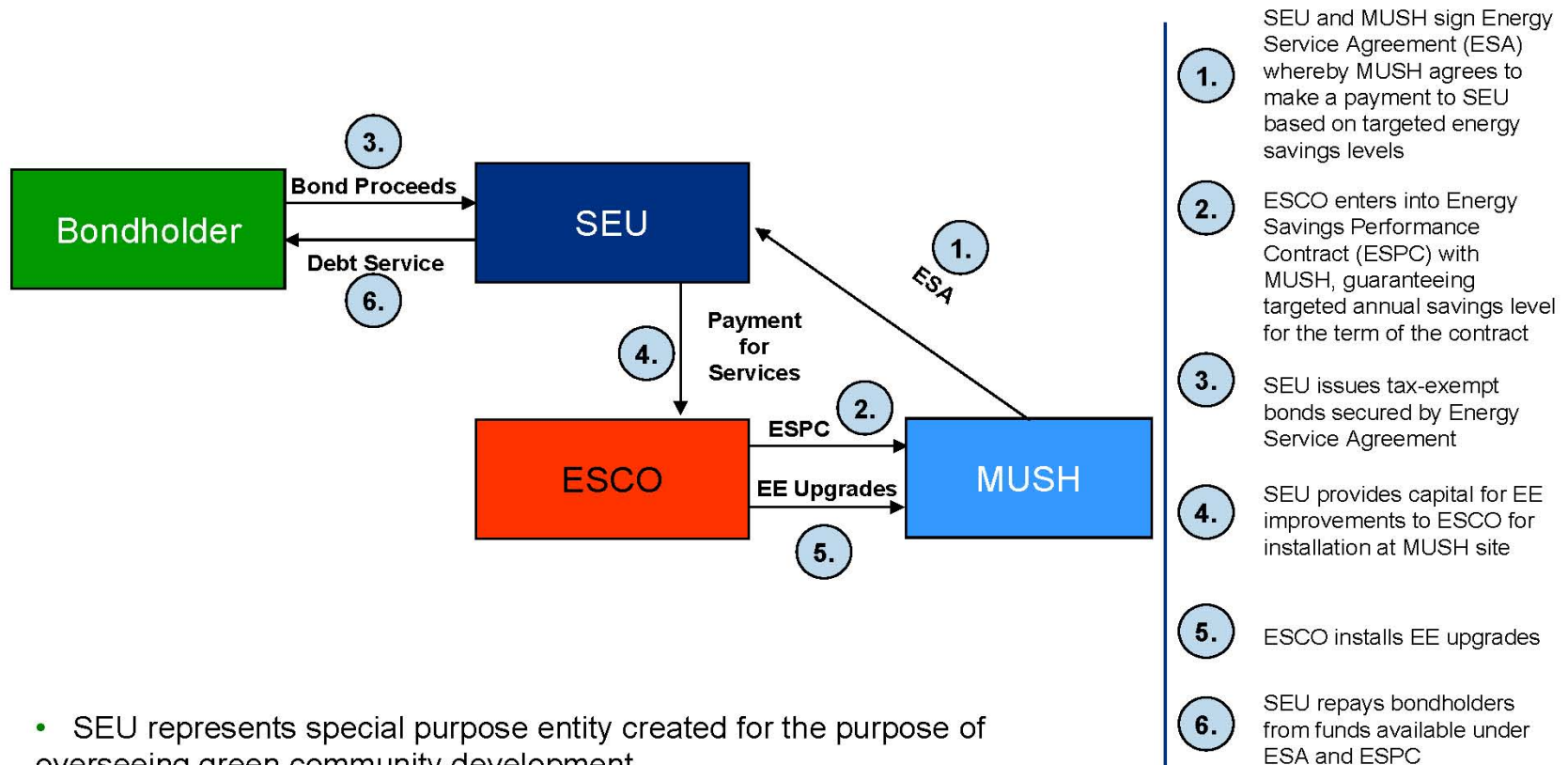
<b>Investment</b>	\$30 million
<b>Savings</b>	\$3.63 million/yr
<b>% Savings</b>	21%*
<b>ESCO</b>	Noresco
<b>Project</b>	Building Retrofits



\*Savings assumption based on a 10 year borrowing assumption

# Energy Efficiency Revenue Bonds (EERBs)

EERB debt service is secured by Energy Service Agreements



- SEU represents special purpose entity created for the purpose of overseeing green community development
- ESCO is an energy savings company hired to make improvements designed to improve efficiency



Kanazawa Bus Terminal,  
Tokyo, PV Rooftops



Tokyo suburb,  
PV Rooftops

# SEU 101



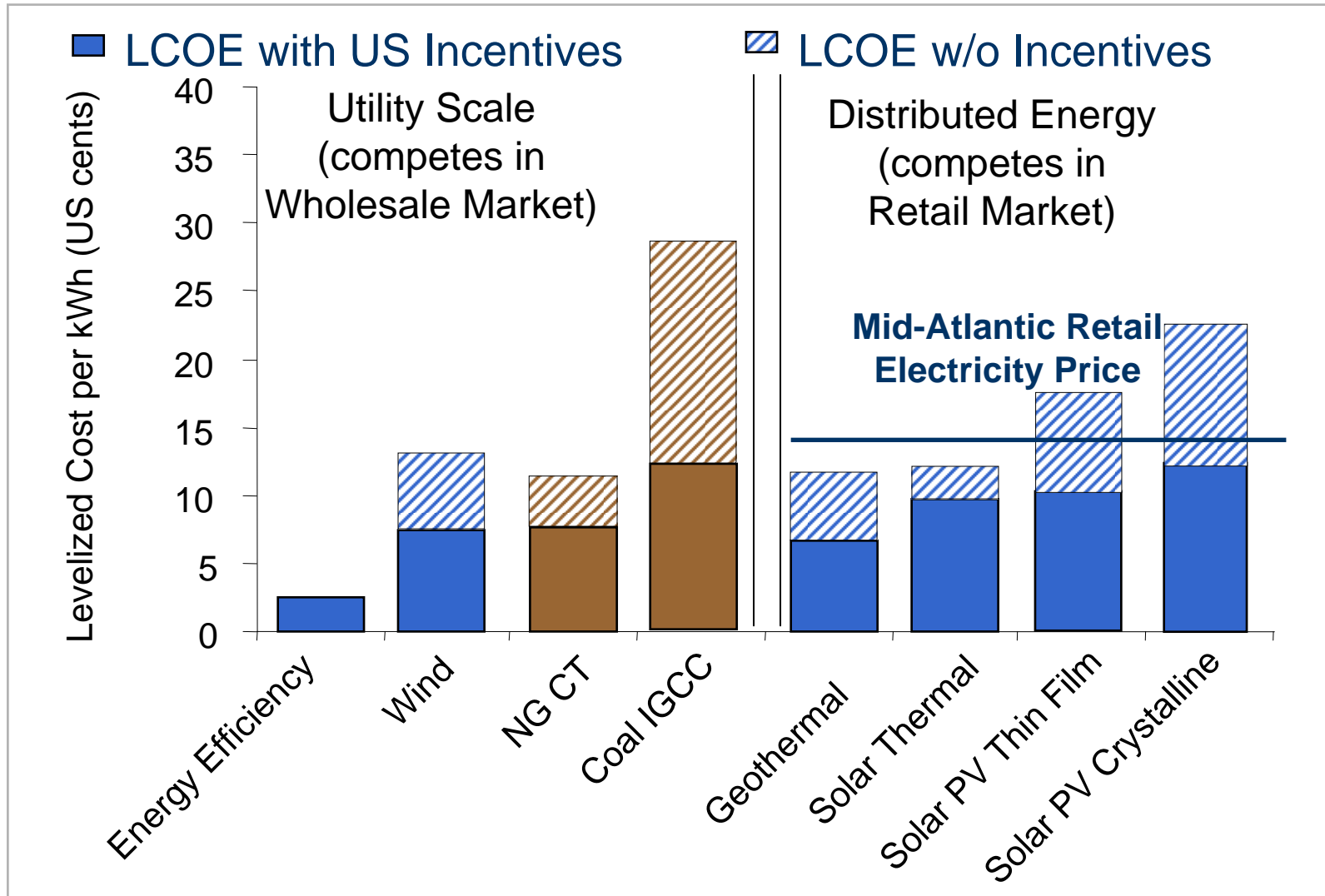
Cultural Center, Gyoda City,  
Saitama Prefecture, PV Atrium Glass



Kiyomidai Community Center,  
Osaka, PV Atrium Glass



# Renewables – Approaching Parity

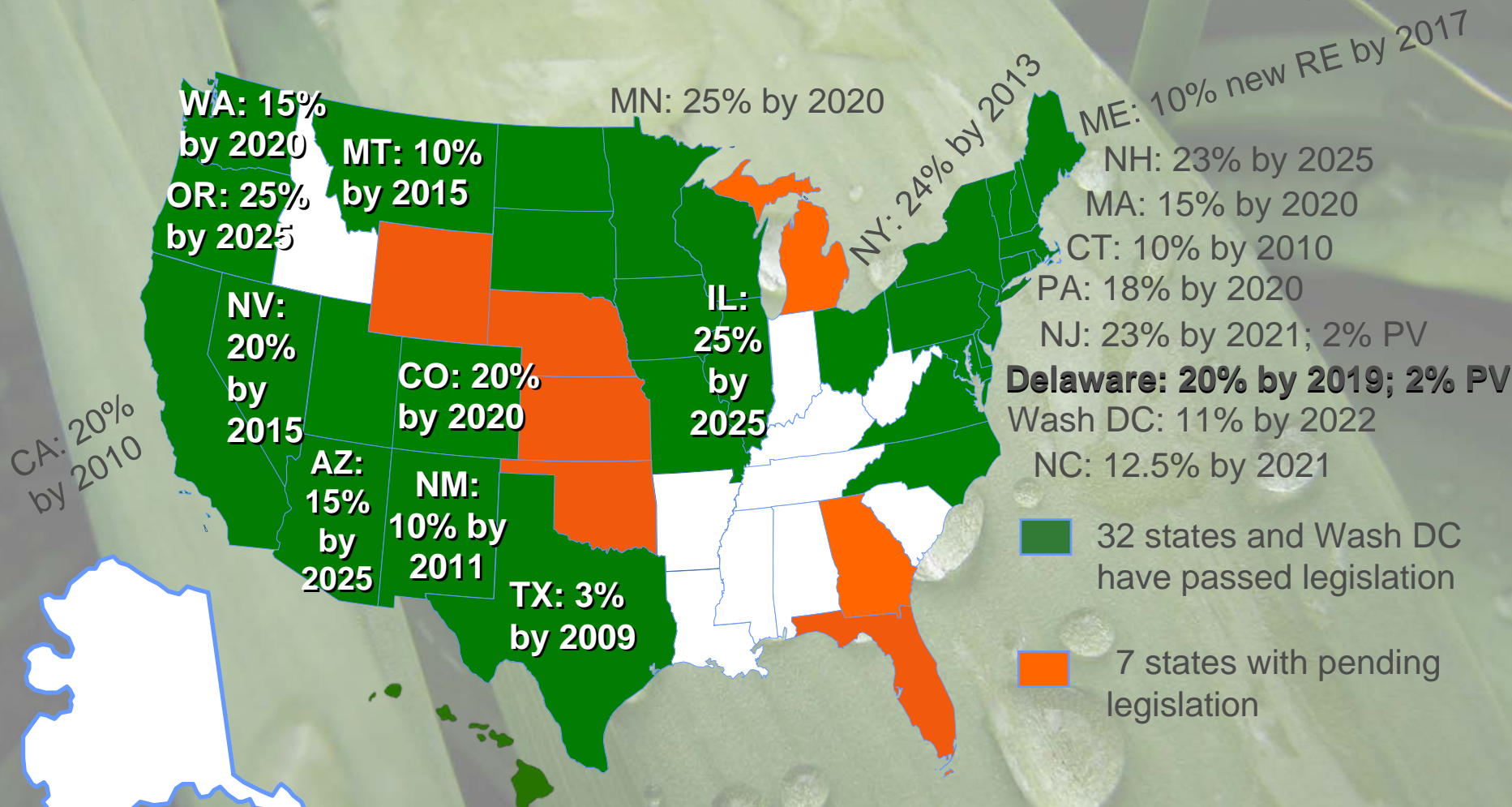


Data Source: Lazard 2008; CEEP forthcoming



Center for Energy and Environmental Policy

# State Renewable Portfolio Standards in the U.S.



32 states and Wash DC have passed legislation  
 7 states with pending legislation

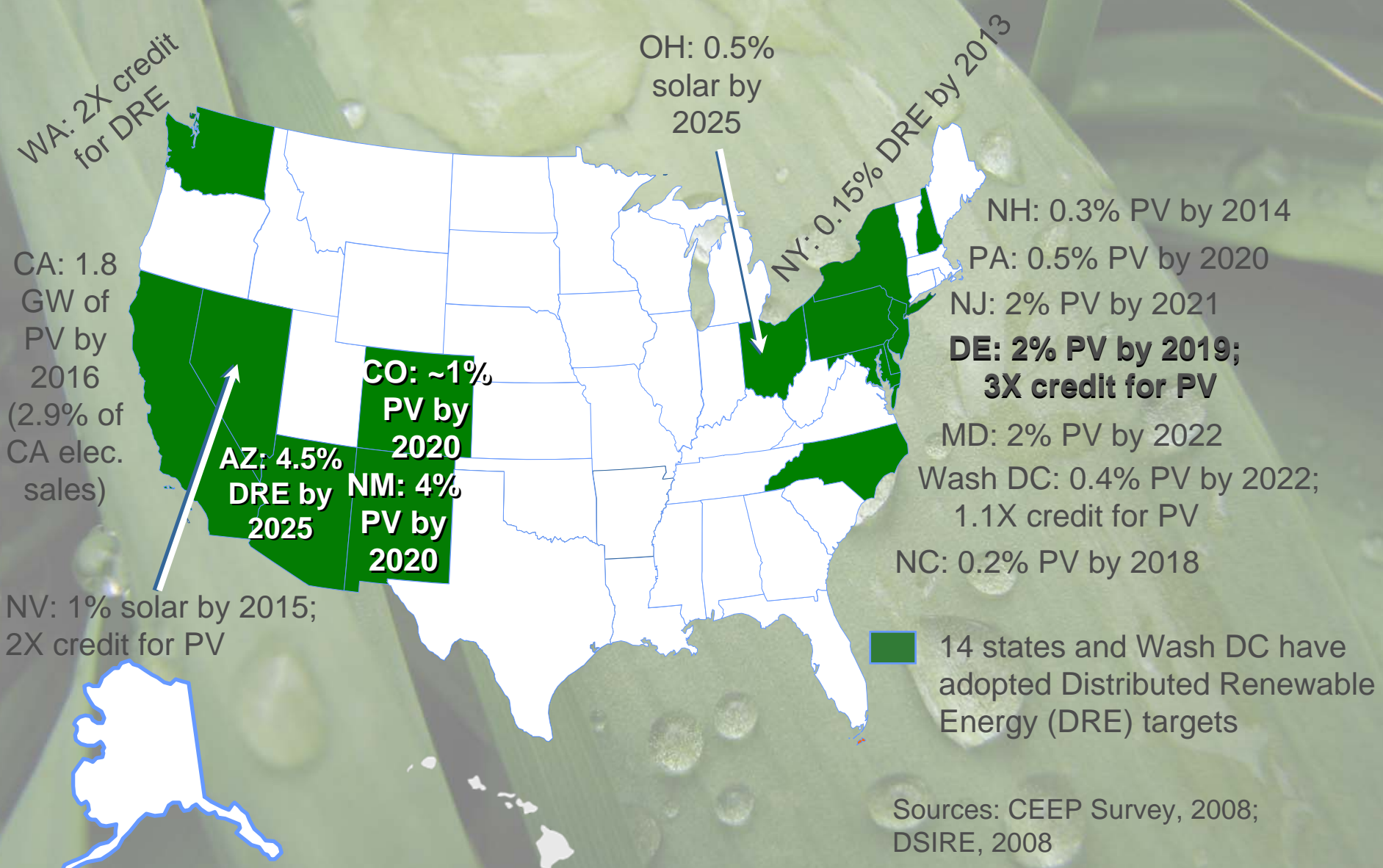
29 states have completed Climate Change Action Plans  
<http://yosemite.epa.gov/oar/globalwarming.nsf/content/ActionsStateActionPlans.html>

Sources: CEEP Survey, 2008; DSIRE, 2008



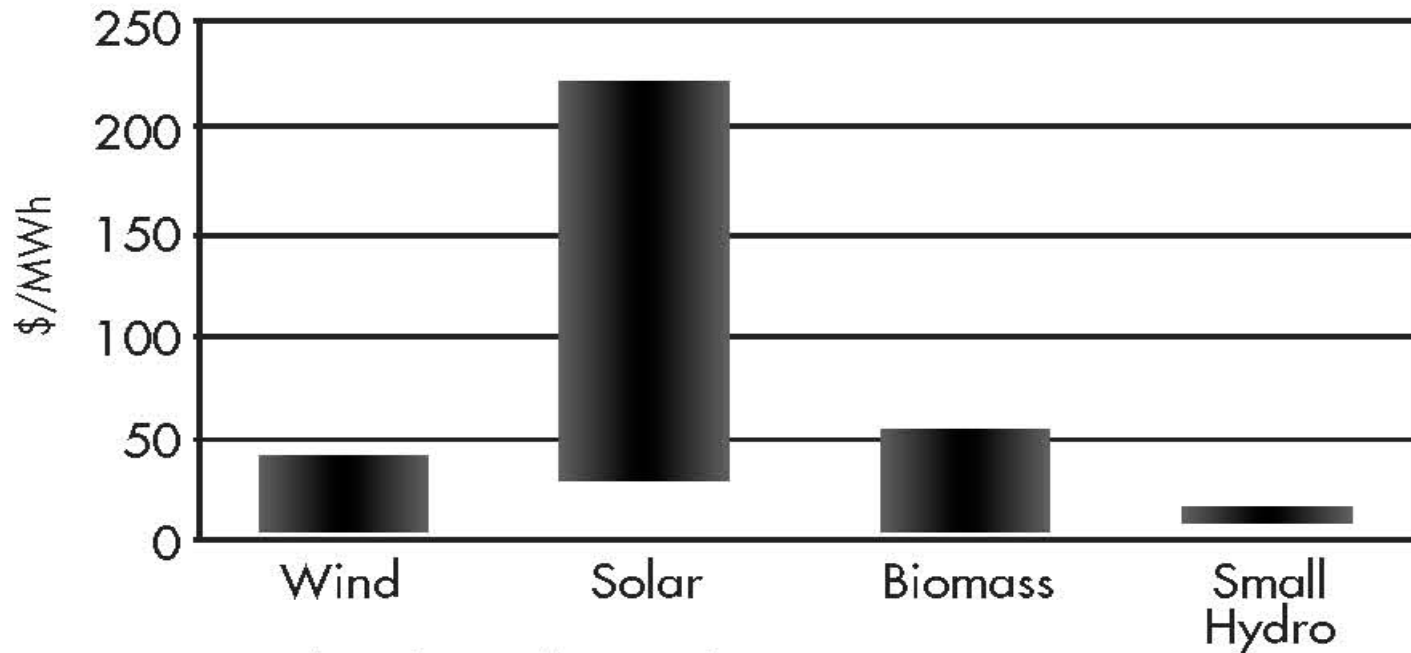
Center for Energy and Environmental Policy

# U.S. States with Distributed Renewable Portfolio Standards



# Renewable Energy Credits (RECs) Markets for Sustainable Energy

## Wholesale REC Prices by Resource Type

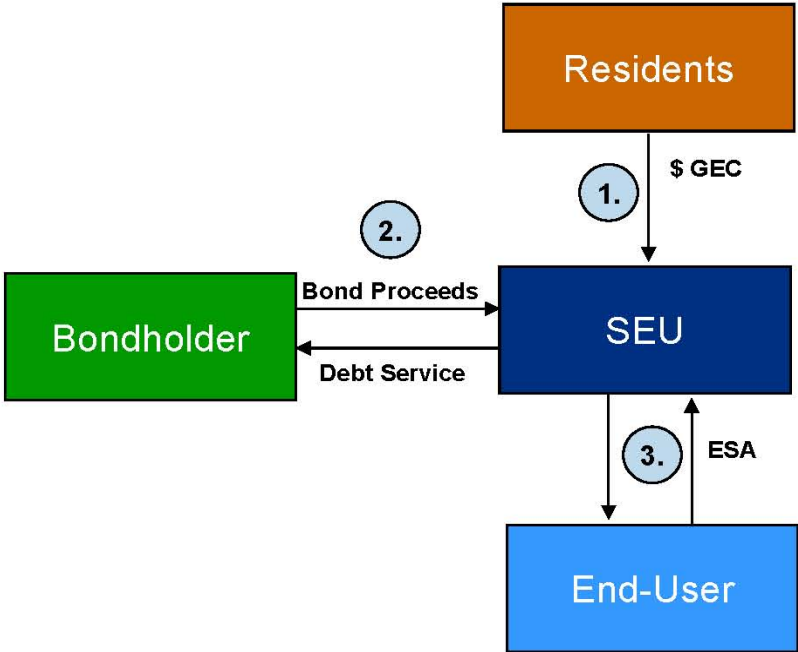


Source: National Renewable Energy Laboratory



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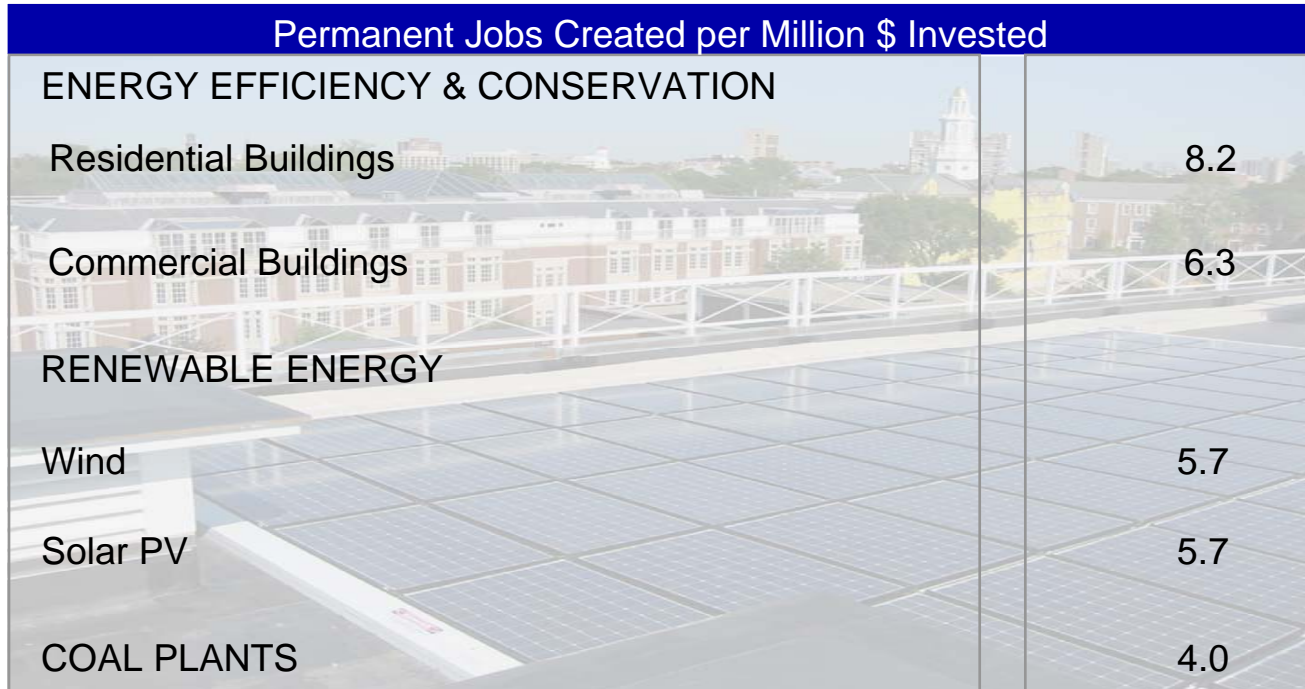
# Federal Economic Stimulus Funds

American Recovery and Reinvestment Act of 2009  
(US House version – Billion \$)

American Recovery and Reinvestment Act of 2009 (US House version – Billion \$)	
<b>RENEWABLE ENERGY</b>	<b>\$11.6+</b>
Grants & Loan Guarantees	\$8.0
RD&D	\$2.0
Clean Renewable Energy Bonds (CREBs)	\$1.6
3-Year Extension of Renewable Energy Production Credit	+++

# Green Jobs: The Sustainable Energy Advantage

Investments in sustainable energy technologies create more permanent jobs than traditional energy supply



Permanent Jobs Created per Million \$ Invested	
<b>ENERGY EFFICIENCY &amp; CONSERVATION</b>	
Residential Buildings	8.2
Commercial Buildings	6.3
<b>RENEWABLE ENERGY</b>	
Wind	5.7
Solar PV	5.7
<b>COAL PLANTS</b>	4.0

Sources: Erhardt-Martinez & Laitner, *The Size of the U.S. Energy Efficiency Market*. ACEEE, 2008. Singh & Fehrs, *The Work that Goes into Renewable Energy*. REPP, 2001. Values for residential and commercial building sector applications are adjusted from the original report to include appliance and utility rebate programs.