

# Energy Efficiency as the “First Resource”

Presentation  
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# The Killer Ap – Energy Efficiency

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- “ This may sound too good to be true, but the U.S. has a renewable-energy resource that is perfectly clean, remarkably cheap, surprisingly abundant and immediately available. It has astounding potential to reduce the carbon emissions that threaten our planet, the dependence on foreign oil that threatens our security and the energy costs that threaten our wallets. Unlike coal and petroleum, it doesn't pollute; unlike solar and wind, it doesn't depend on the weather; unlike ethanol, it doesn't accelerate deforestation or inflate food prices; unlike nuclear plants, it doesn't raise uncomfortable questions about meltdowns or terrorist attacks or radioactive-waste storage, and it doesn't take a decade to build. It isn't what-if like hydrogen, clean coal and tidal power; it's already proven to be workable, scalable and cost-effective. And we don't need to import it.”

Michael Grunwald, Time Magazine, December 31, 2008

*That resource is energy efficiency.*

# Why Efficiency Should be the “First Resource”

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- No footprints:
  - NO emissions – none
  - No habitat destruction or fragmentation
- Availability and reliability:
  - Commercially available for immediate results
  - It's everywhere: in every state and community
  - Three decades of proven performance
- Least Cost:
  - Cheaper than ANY form of power generation
  - Lowers the cost of carbon policies

# The impact of comprehensive, robust, sustained energy efficiency policies

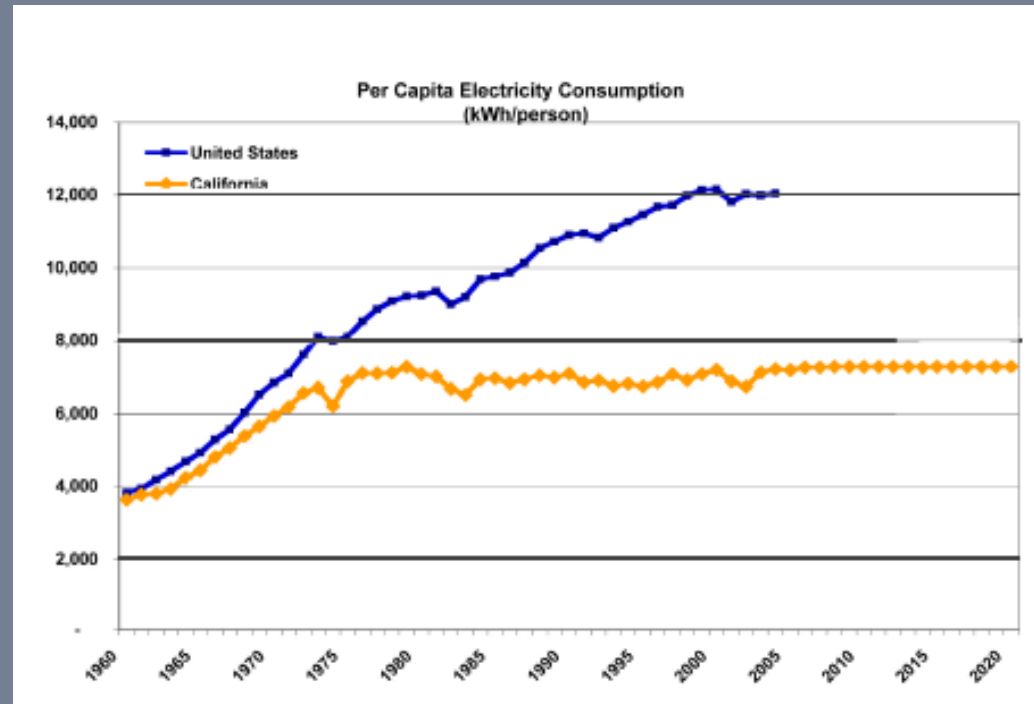
## Transformational changes in energy usage

Nationally, per capita consumption has grown ~9% each decade.

*For three decades* strong conservation policies have produced *0% per capita growth* in California.

### Policy components:

- Utility DSM programs
- Incentives for same
- Building codes
- Appliance standards



Source: Regulatory Assistance Project, 2008

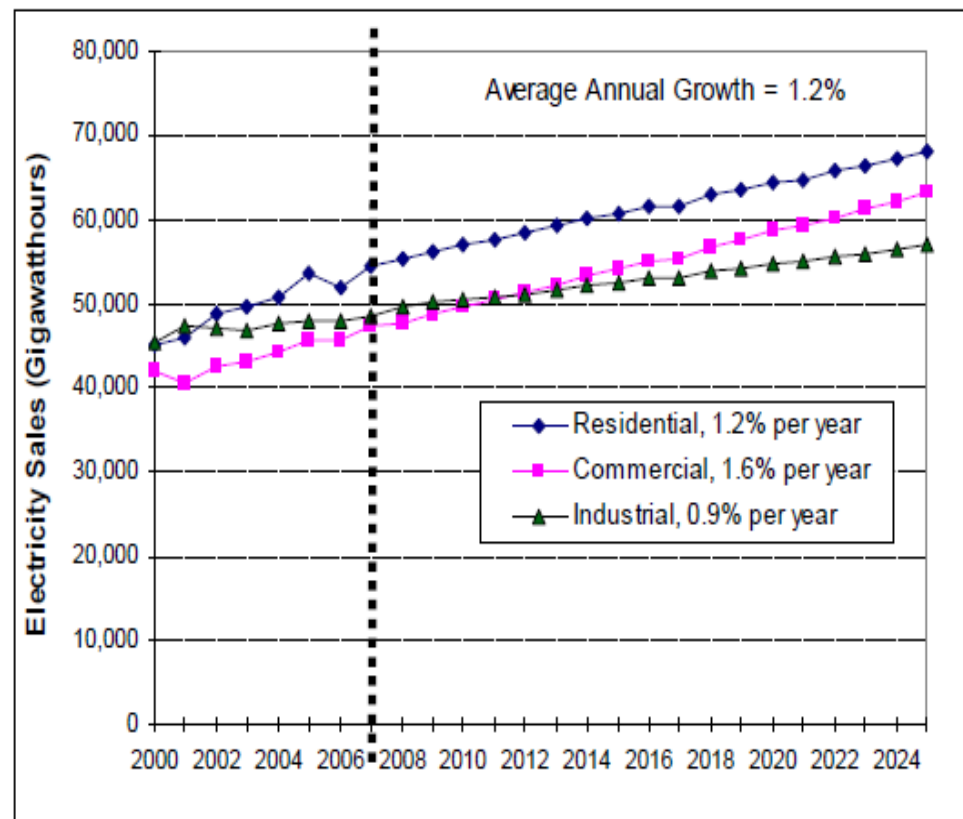
# Business as Usual for Pennsylvania

Without new policies, Pennsylvania will require more supply

But there is a wealth of untapped potential for efficiency here

We can replicate the successes of the leading states

Figure 4. Pennsylvania Electricity Sales (GWh) Forecast by Sector

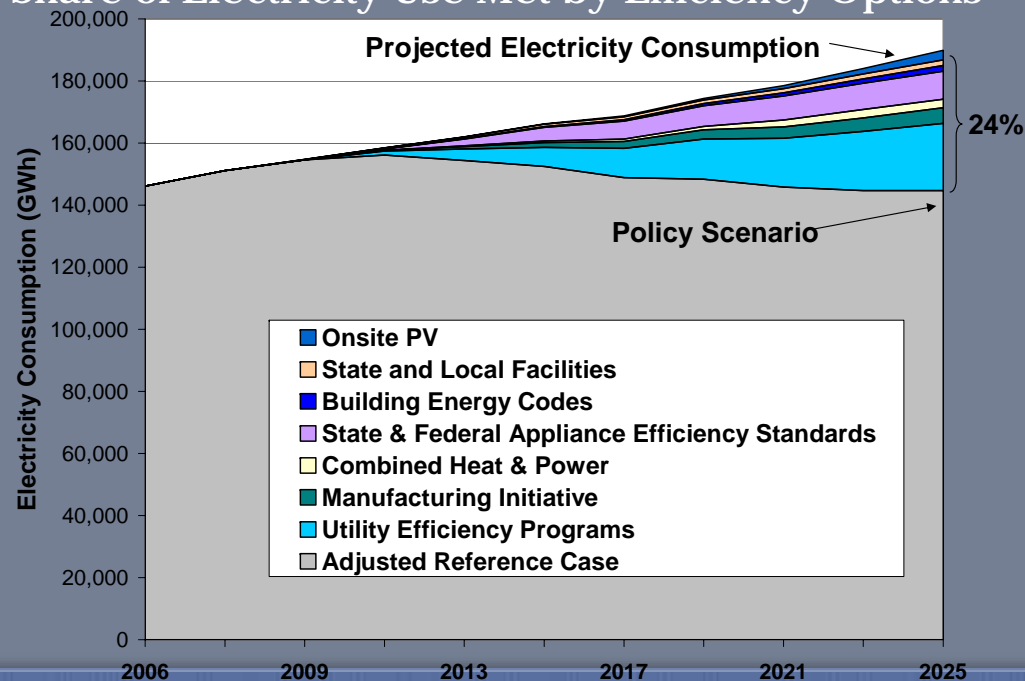


# The Scale of the Potential

Efficiency programs can reduce total electrical use in PA

Utility demand side management (DSM) programs can achieve the greatest savings

Share of Electricity Use Met by Efficiency Options



Source: ACEEE

# Benefits over 15 Years

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By 2025, implementing a robust portfolio of energy efficiency programs would provide the following benefits:

- Jobs

- 27,000 jobs, the equivalent of relocating 200 manufacturing plants to Pennsylvania
- Over \$1 Billion in wages

- Bill savings to ratepayers

- Annual savings in the billions (over \$4B in 2025)

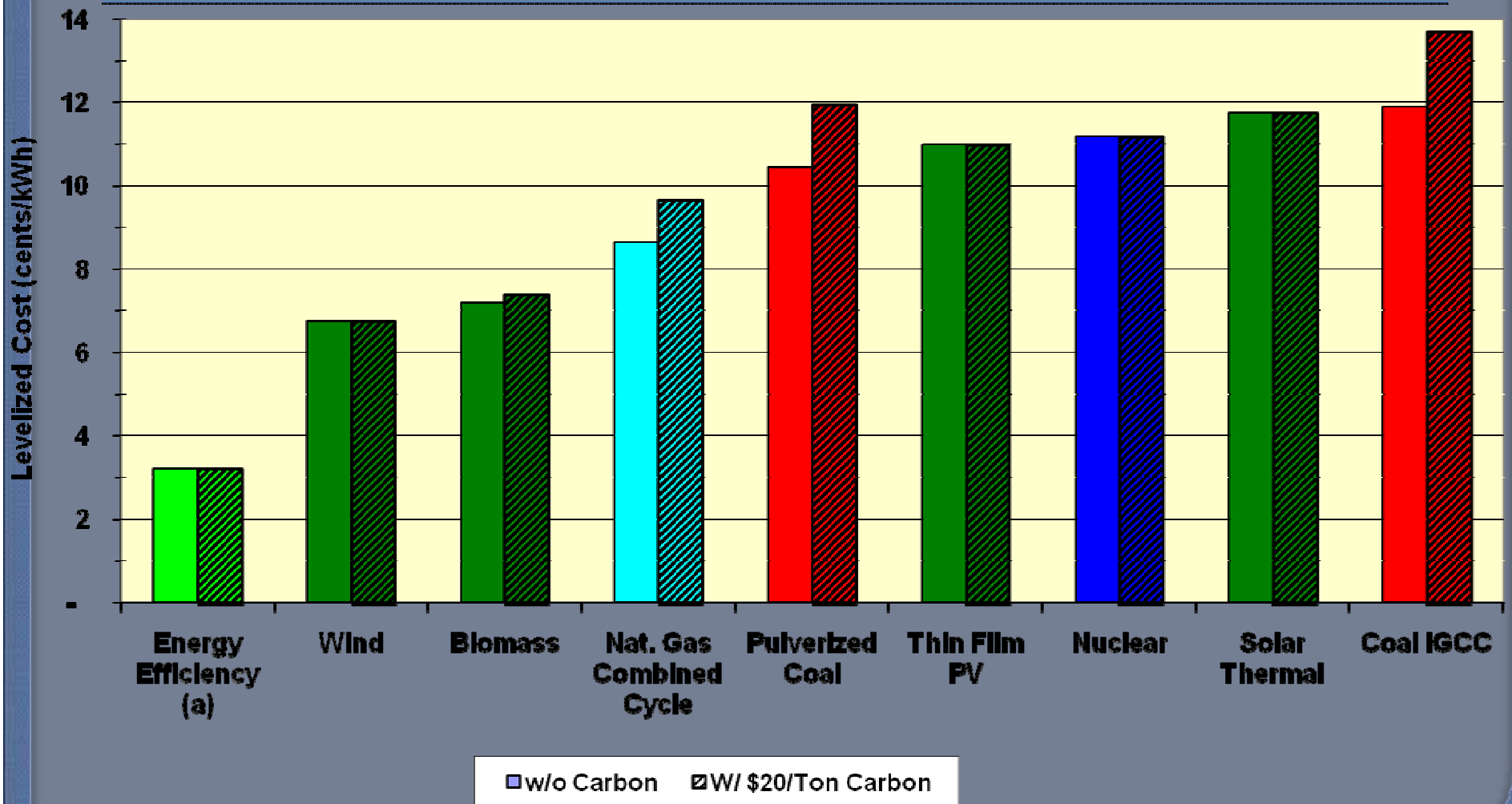
# Pennsylvania's new drive for energy efficiency

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- Act 129 sets the stage for rapid advances through utility efficiency programs
  - Sets savings targets
    - 1% of total electrical sales by 2011
    - 3% of sales and 4.5% of peak demand by 2013
  - Penalties for failure to meet performance targets
  - Implementation to begin later this year / early next year
  - Expect an array of programs for homeowners, businesses, and governmental organizations

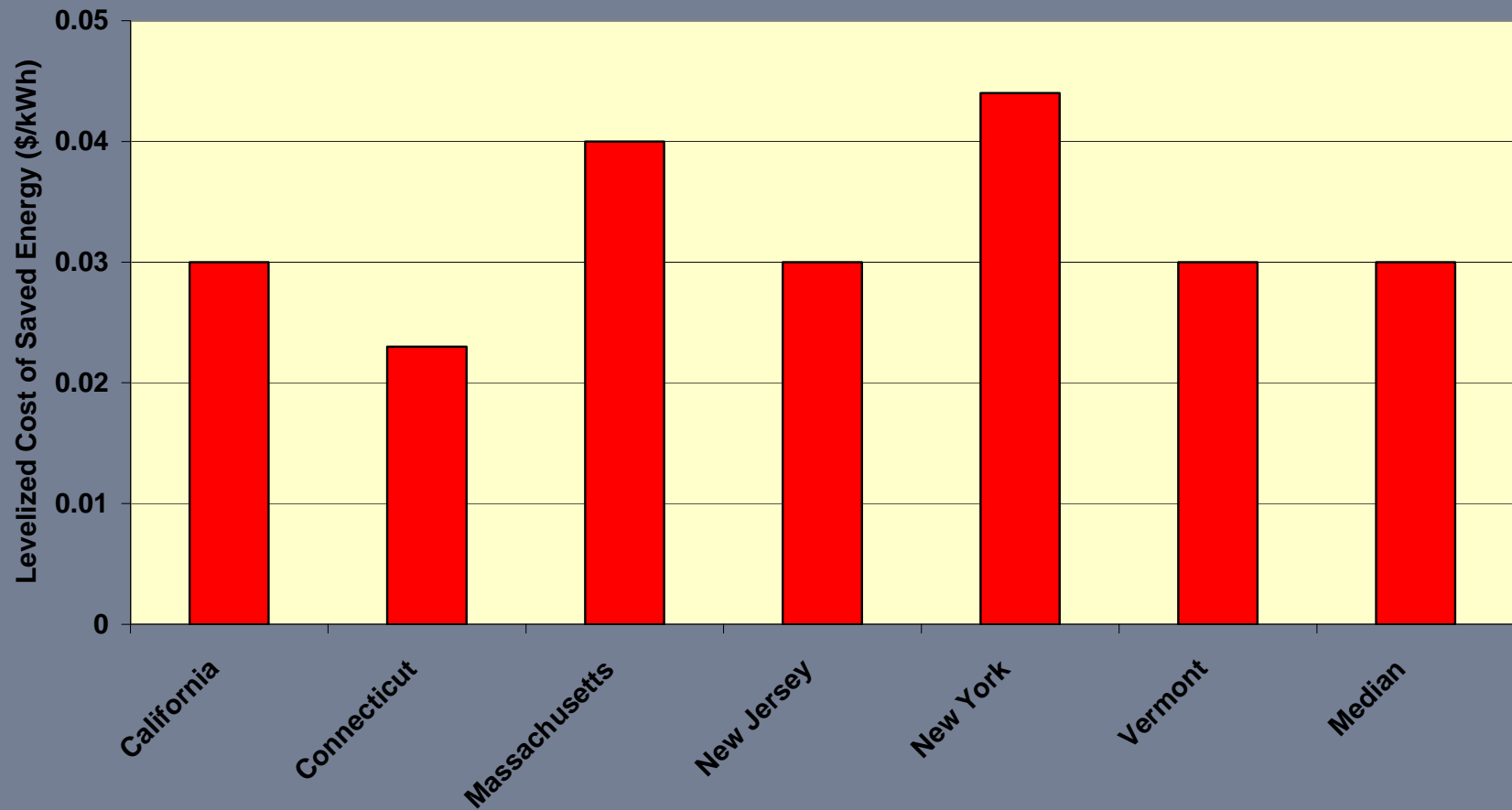


# Cost of New Electricity Resources



# Proven Cost-Effectiveness of Efficiency Resources

## Evaluated Results of All-Sector State-Level Energy Efficiency Programs



Source: ACEEE, "Five Years In," 2005

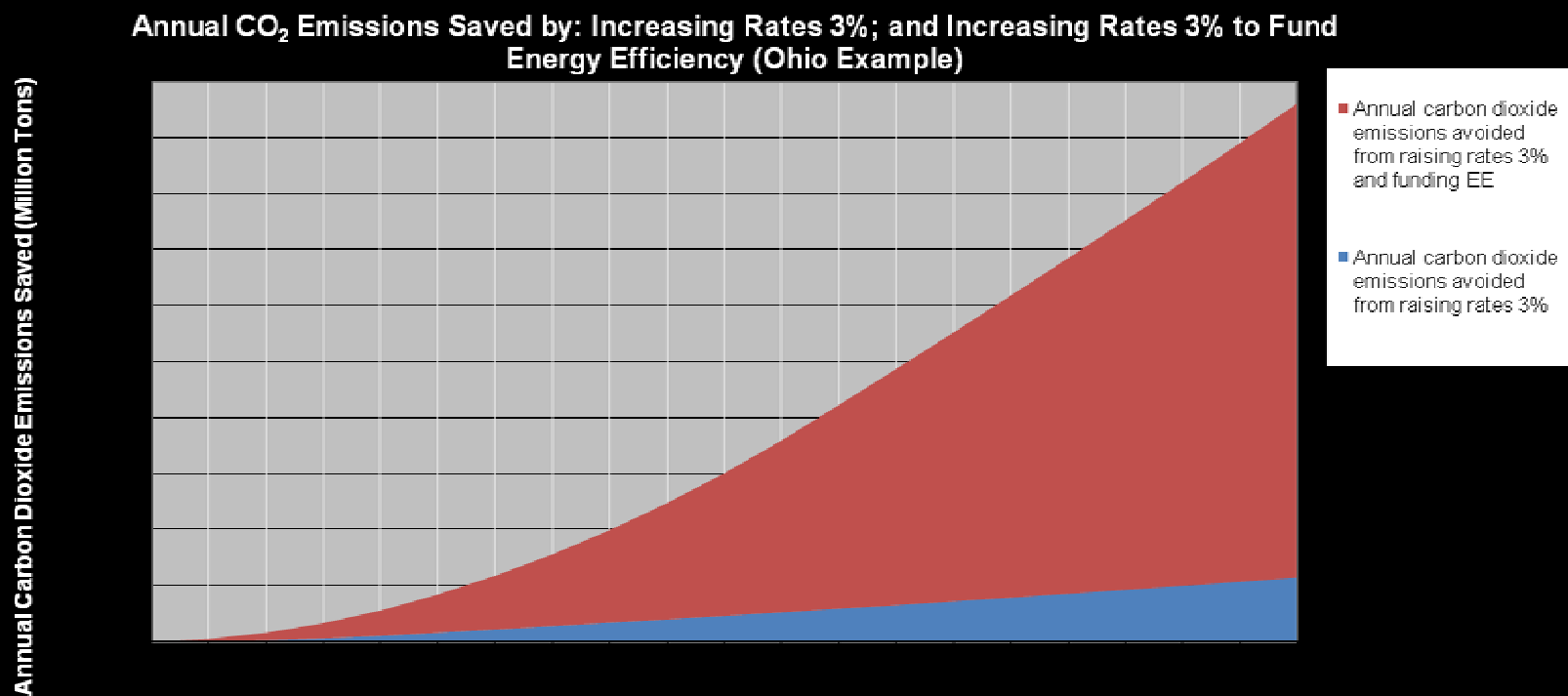
# The Win-Win: Lowering Costs for Energy And GHG Emissions Reductions

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- National Action Plan for Energy Efficiency: efficiency can save the US ‘many billions’ of dollars
- Efficiency also lowers the costs of climate policies
  - Analysis of Warner-Lieberman and other bills shows efficiency makes these policies more cost-effective
- Designing carbon policies to tap the least cost emission reductions will necessitate efficiency

# Why Efficiency is Key to Carbon Policies

- For each dollar expended, efficiency programs can save 7 times more carbon than carbon taxes alone



ptions: Electricity use increases by 1.7% per year; Retail electric sales increase by 3%; Price elasticity is -0.25 (-0.75 for a 3% increase), distributed over 5 years; Carbon dioxide emissions are 0.915 tons per MWh in Ohio; Cost of EE is 3 cents per kWh; Average EE measure life is 12 years

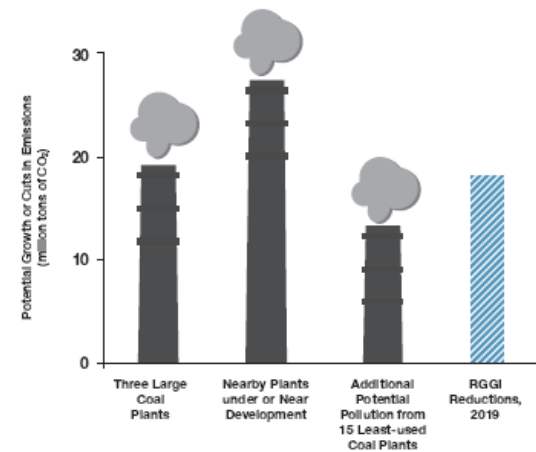
# How much difference would Pennsylvania efficiency make?

Pennsylvania is one of the world's largest emitters of greenhouse gas emissions, largely due to our use of coal-fired power plants

Emissions from 2100 MW of new coal plants would offset all RGGI benefits (Union of Concerned Scientists)

FIGURE 11: Coal vs. Climate

A single year's CO<sub>2</sub> emissions from three large new coal plants, from plants now under or near development in nearby states, or from full use of the 15 nearby coal plants with the lowest capacity factors would cancel out most or all of the cuts in global warming pollution expected from RGGI.



Robust efficiency programs could displace twice the level cited above – in Pennsylvania alone (source: PennFuture)

# If it's all that – why aren't we doing more of it?

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- Traditional regulation policies set up utility efficiency programs to fail
  - Under traditional rate structures, utilities make money if they build capacity and sell power.
  - Efficiency is antithesis of this
- Efficiency may be good for the planet but when it's bad for profits (or shareholders), companies invest in business as usual
- The solution: Corrective redesign of utility rates
  - Create positive incentives for energy efficiency

# Kicking it up a notch

- Aggressive incentives policies are associated with *three times the level of energy savings*

## Relationship Between Reduced Statewide Electricity Sales and Use of Utility DSM Incentives

Efficiency Incentives Approach	Savings in Electricity Use
No incentives	0.19%
Performance incentives only	0.34%
Rate decoupling only	0.34%
Performance incentives. + decoupling	0.60%

Decoupling – redesign of rates to break the linkage between sales and profits , making EE programs revenue neutral

Performance incentives – higher payout for higher performance

# Energy Efficiency Resource Standards

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- One of the largest opportunities for achieving substantial energy and emissions savings
- Sets savings targets for utilities
- All EERS include end-user efficiency
- Some include efficiency upgrades to grid and power supply
- Programs can be started quickly



# State Examples

## Examples of Energy Efficiency Resource Standards

State	Target	Notes
Texas 1999 & 2007	Initially 10%. Now 20% by 2010.	First state to establish EERS.
Vermont 2000	1.75% annual increments	Efficiency Vermont, an independent 'efficiency utility' is contractually required to achieve targets.
California 2004	23,183 GWh and 4885 MW in 2013	Targets annual increments of more than 1%
Pennsylvania 2004 & 2008	No initial EE target. Now 3% by 2013	Efficiency is an eligible resource in the alternative energy portfolio standard
Virginia 2007	10% by 2022	State Corporation Commission conducting a proceeding
New York 2008	15% by 2015	NYPSC working with utilities and NYSERDA to expand current programs

Source: *State Energy Efficiency Resource Standard (EERS) Activity*, Nov. 2008, ACEEE.



# EERS policy today

EERS Bills in Congress: 15% electric, 10% gas savings by 2020

States may set higher targets

PA targets are higher in first three years

COMPARISON OF STATE AND FEDERAL		
Year	Federal legislation	PA Act 129
2011	NA	1.0
2012	1.00	-
2013	2.00	3.0
2014	3.25	TBD
2015	4.50	TBD
2020	15.00	TBD

## ○ Recovery bill

- Largest energy bill in our history: \$20 B to EE

# The First Resource, In Summary

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- Nothing is lower cost
- Nothing is cleaner
- Carbon/climate policies are more expensive without it
- Aggressive EE policies can displace generation and transmission
- It is available now, in every community
- We need to invest and commit