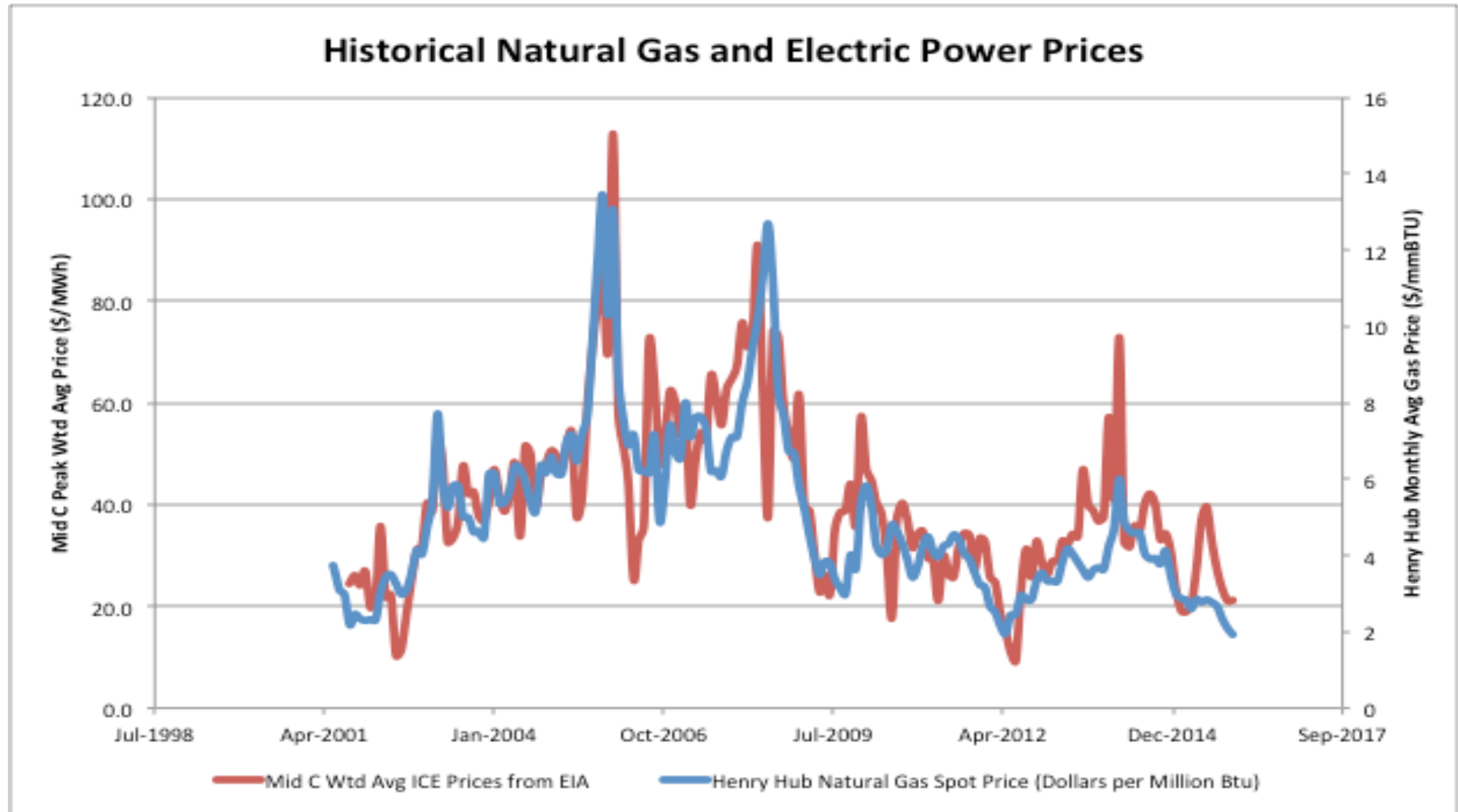


Will Oregon's Green Energy Future Help or Hurt Energy Efficiency?

Richard Beam
Chief Environmental Officer
Providence Health and Services

APEM Fall Forum 2016

Fossil Fuels Set Energy Pricing ...



States are Mandating GHG Reduction

2

NY State Energy Plan - 2030 Goals

40%

Reduction
in GHG emissions
from 1990 levels

Reducing greenhouse gas (GHG) emissions from the energy sector—power generation, industry, buildings, and transportation—is critical to protecting the health and welfare of New Yorkers and reaching the longer term goal of decreasing total carbon emissions 80% by 2050.

50%

Generation
of electricity from
renewable energy sources

Renewable resources, including solar, wind, hydropower, and biomass, will play a vital role in reducing electricity price volatility and curbing carbon emissions.

600 TBTU

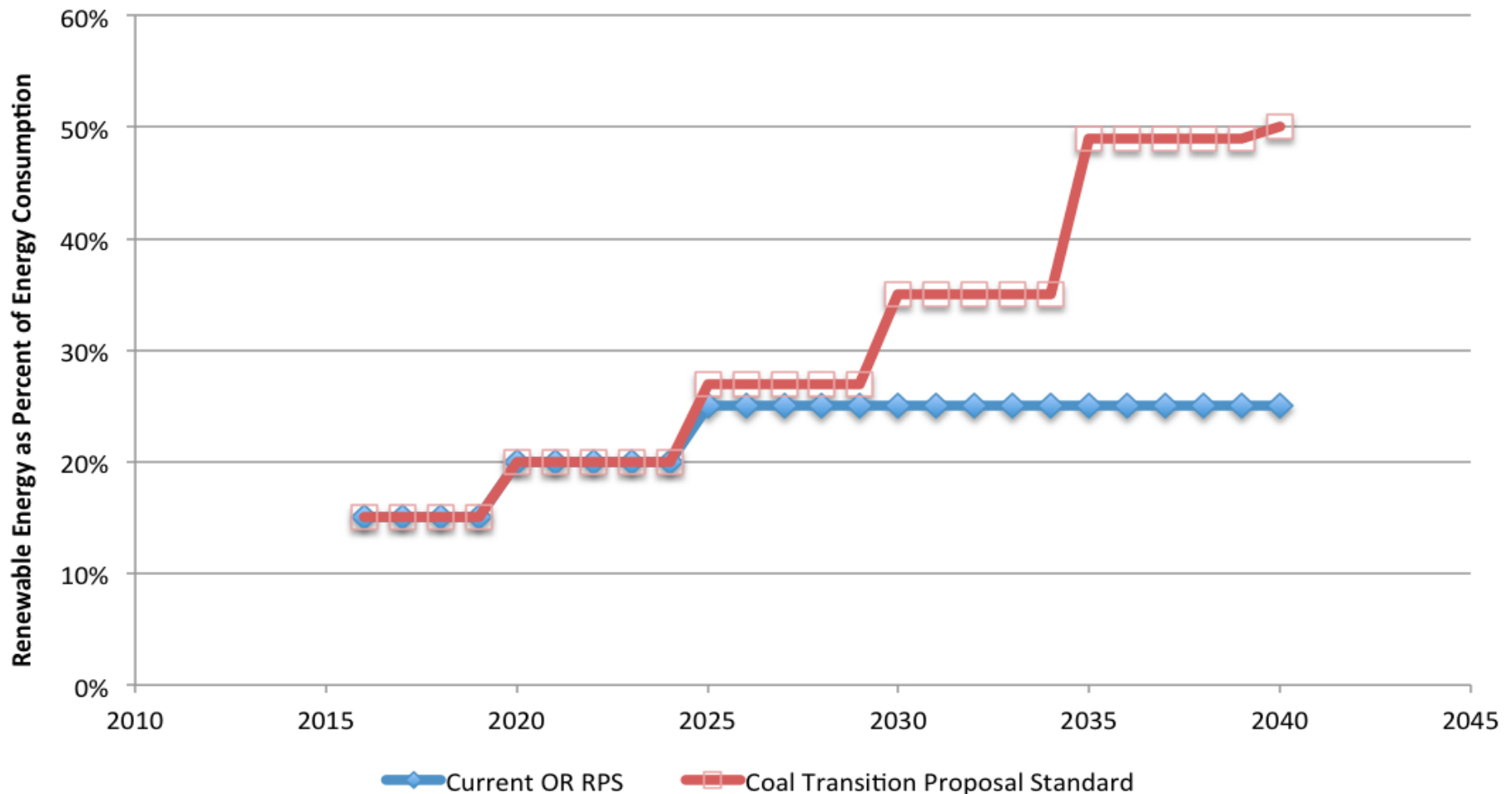
Increase
in statewide energy
efficiency

Energy efficiency results in lower energy bills and is the single most cost effective tool in achieving clean energy objectives. 600 trillion British thermal units in energy efficiency gains equates to a 23% reduction from 2012 in energy consumption in buildings.



OREGON Renewable Energy Standards

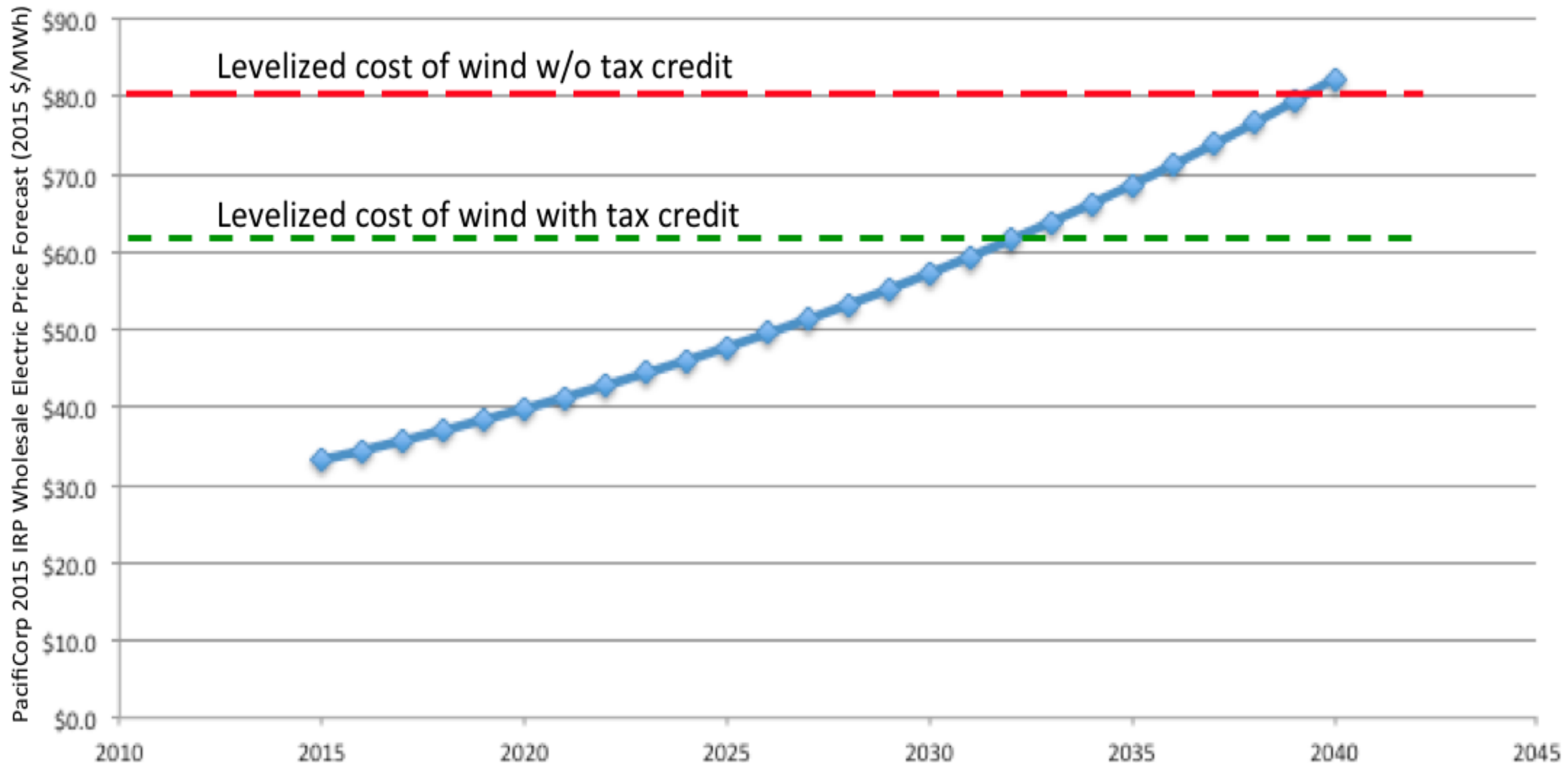
Current and Proposed Renewable Energy Standards



OREGON Mandates 50% RE by 2040

OREGON Mandates “No Coal” by 2035

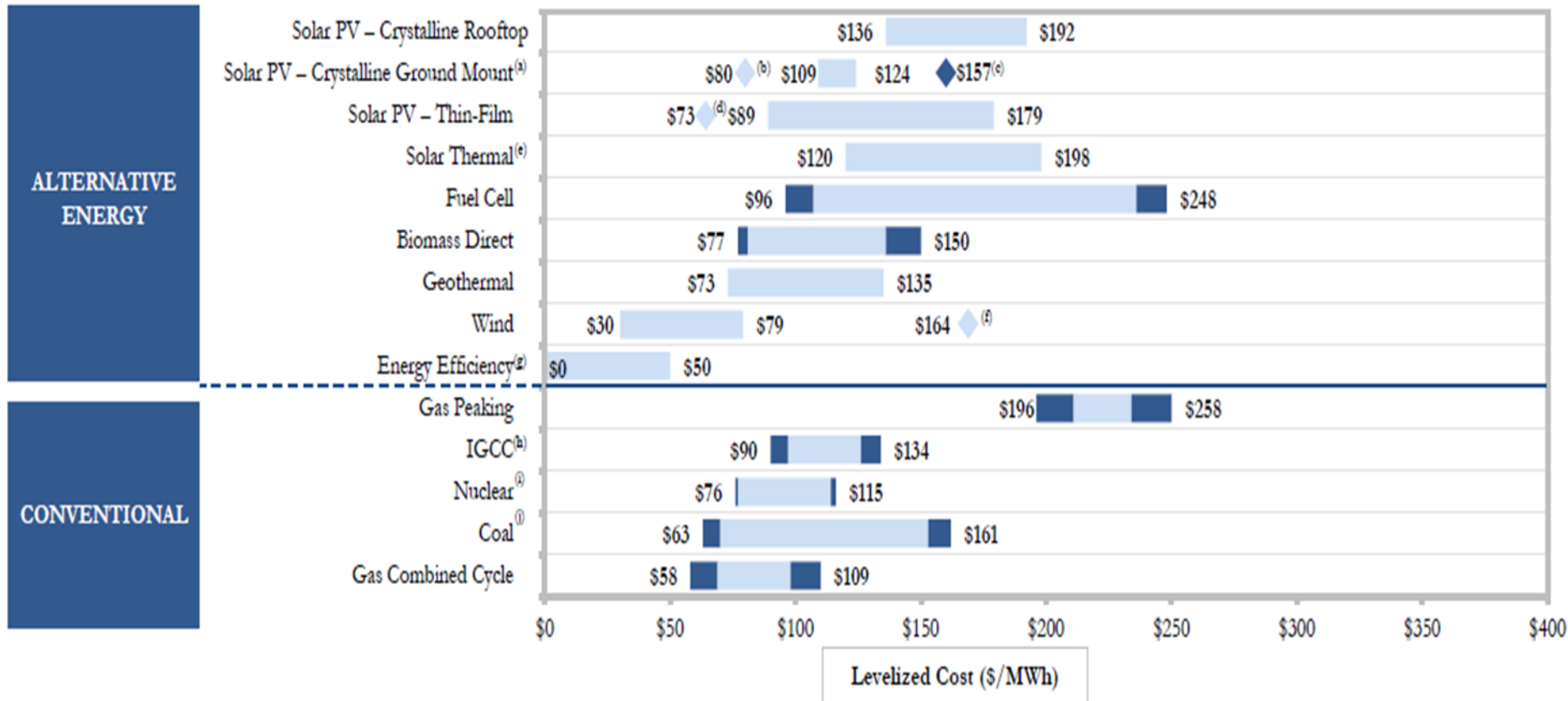
Wholesale Electric Market Price Forecast and Levelized Cost of Wind



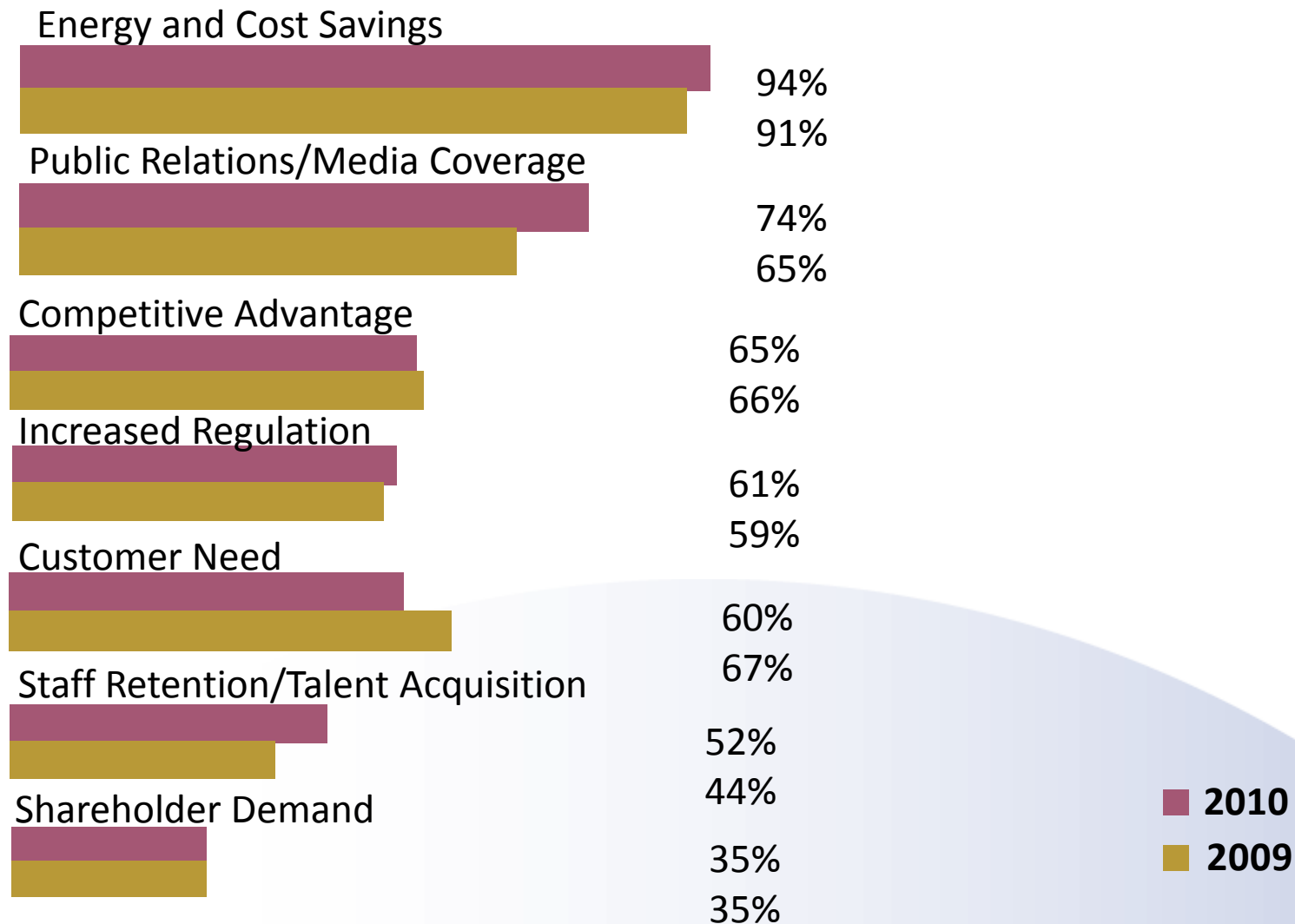
Estimated Rate Impacts of No Coal

Scenario	Scenario	Average Rate Impact 2015--2040	Biggest Year Increase Over Base Case¹¹	Biggest Year Decrease Over Base Case¹²
1 -- No tax Credit, No Carbon Value	1 -- No tax Credit, No Carbon Value	0.90%	2035 (3%)	2040 (--0.6%)
2 -- No tax Credit, low/high Carbon Values	2 -- No tax Credit, low/high Carbon Values	--0.2% to --0.8%	2030 (1.3%)	2040 (--6.1%)
3 -- Tax Credit, No Carbon Value	3 -- Tax Credit, No Carbon Value	--0.60%	2030 (0.6%)	2040 (--5.3%)
4 -- Tax Credit, low/high Carbon Values	4 -- Tax Credit, low/high Carbon Values	--1.8% -- --2.2%	2018 (0.2%)	2040 (--10.8%)

Still The Low Price Leader!



Key Drivers Promoting Corporate Sustainability



Office Building Energy Efficiency Case Study



131 South Dearborn

Location

Chicago, IL

Building Size (Square Feet)

gross : 1,778,502

rentable: 1,504,264

Owner

131 S. Dearborn LLC

Building Management Company

Hines

Cost of Improvements

Operational improvements only, no retrofit costs

Savings (kWh) in the First 12 Months of Hines Operation of Building

6,232,496

Percentage of kWh Savings

23%

Value of Energy Savings in the First 12 Months of Hines Operation of Building

\$525,733

Percentage of Energy Cost Savings

21%

Gunderson Lutheran Energy and Cost Savings Projects

	Cost	Annual Savings	Payback (years)
Chiller/Tower Optimization	\$88,000	\$65,000	1.4
Zone Scheduling (exhaust fans and air handlers)	\$77,000	\$91,000	0.8
Condenser Water Acid Feed	\$17,000	\$26,000	0.7
Reducing Station for HP Boilers, Boiler Economizers, New Boiler Controls, VFD Drives, Auto Blowdown	\$285,000	\$69,000	4.1
Steam Traps	\$230,000	\$42,000	5.5
Energy-Efficient Lighting System	\$1,615,000	\$265,000	6.1
Nightwatchment Software Program—Auto Turn-Off of Computers	\$130,000	\$39,000	3.3
Removable Insulation on Fittings, Valves, Unions, Etc.	\$237,000	\$87,000	2.7
New Chiller	\$250,000	\$70,000	3.6

Thank You! Questions?

Richard Beam
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