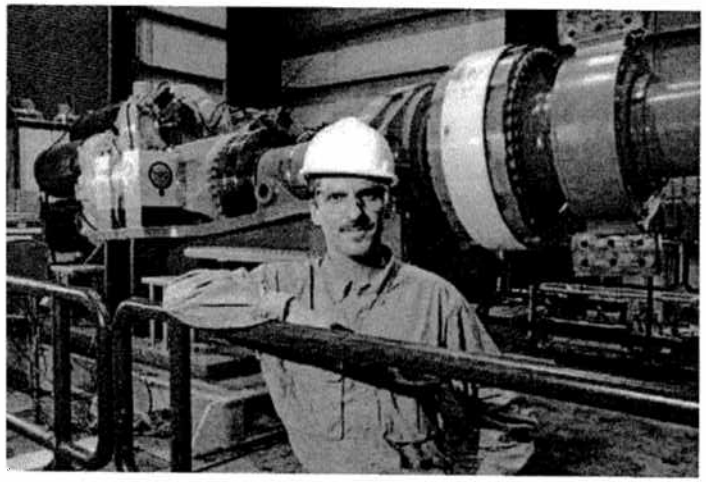
Renew Michigan with Clean Energy

Renewable Energy Standard (RES) Overview

RES = jobs, economic growth, energy security, reduced carbon risk, and cleaner air and Great Lakes

Kim Pargoff
Energy Advocate, Environment Michigan

Mike Shriberg, PhD
Director, Environment Michigan



Core Arguments for a Renewable Energy Standard in Michigan

1. Michigan has the resources and know how
2. It will stimulate our economy
3. It will creates jobs
4. It will help our environment – reducing pollution in our air and Great Lakes
5. It prepares Michigan to be competitive in a carbon constrained economy
6. It diversifies Michigan's energy portfolio

The Renewable Energy Standard: What is it?

- A requirement on retail electric suppliers to supply a minimum percentage of their retail load with renewable sources
- A flexible market-driven policy that relies almost completely on the private sector for implementation
- Does not pick technology "winners" and "losers," but allows technologies to compete against each other
- Applies equally to all competing market participants
- Typically backed with compliance mechanism of some form
- Designed differently in every state

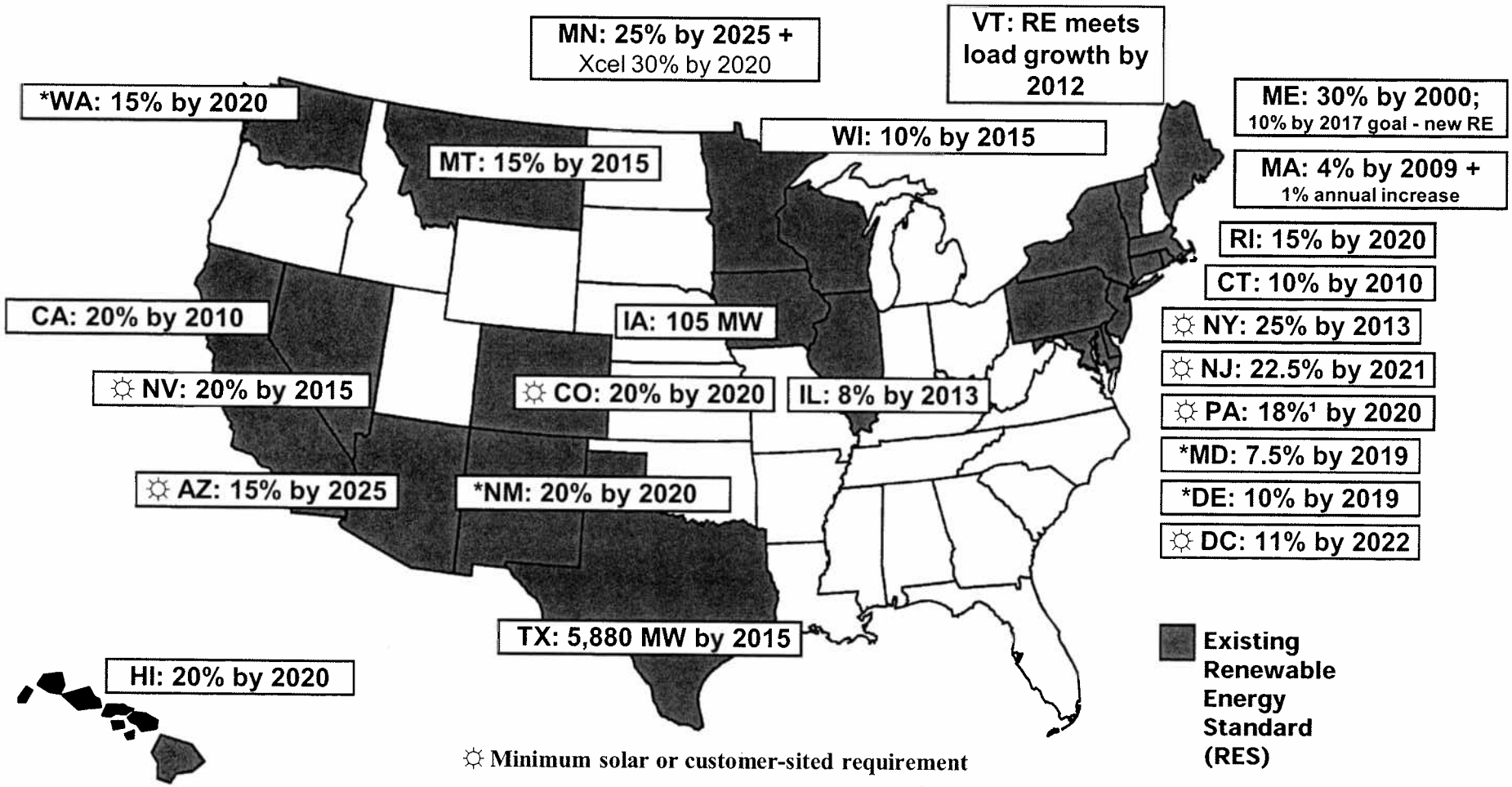
Source: DOE's Lawrence Berkley National Laboratory, AWEA, Union of Concerned Scientists

Why is it the Best Mechanism to Drive Renewable Energy Development?

- RES are major drivers of renewable energy development (example: the strong RES initiatives in CA and TX)
- RES create the market for renewable technologies
- It is the entry point into the renewable energy market
- RES market flexibility will result in competition, efficiency and innovation that will deliver renewable energy at the lowest possible cost
- It is better than a direct subsidy approach - it avoids the process of government agencies distributing funds, which can be inefficient and more costly

Source: Lawrence Berkley National Laboratory (DOE); SERC

Twenty-three states plus the District of Columbia have implemented renewable energy standards



Source: **DSIRE: www.dsireusa.org**, Jan 2007

RES states are benefiting from economic growth, new jobs, a cleaner environment and energy diversification

RES Spur Economic Growth:

- Pennsylvania's RES attracts millions in investment and manufacturing jobs from Spanish wind giant Gamesa
- Texas's first 1,000 MW of wind created 2,500 direct wind-related jobs and another 3000 indirect jobs
- Renewables (wind) in Colorado saved consumers $10M in 2005 and are predicted to save $251M in the next 10 years in electricity costs
- Vestas is building a $ 60 M turbine-blade plant in Colorado due to increased commitment with a 20% by 2020 RES
- Siemens, Clipper Windpower, and Acciona Energia bring plants to Iowa

Source: Interwest Energy Alliance Report; Renewable Energy Policy Project; Wind Energy Works Coalition (US Department of Energy, AWEA, Union of Concerned Scientist)

Limitations and Pitfalls of a RES Can be Avoided Through Careful Design

Limitations:

- Can be complex to design – details are important
- Less flexible in offering targeted support to specific renewable sources, or ensuring resource diversity
- Does not guarantee long-term contracts unless specified
- Implementation success varies by region and policy design

Source: Lawrence Berkley National Laboratory (DOE), UCS

Policy details will determine success of a renewable energy market in Michigan

RES Pitfalls:
▪ Overly Broad Definitions of Eligible Resources (Biomass in Maine and CT) ▪ Lenient Geographic boundaries that reduce local benefits (PA, NJ, etc) ▪ Inadequate enforcement (NV, AZ, CA) ▪ Lack of long-term contracts (e.g. Northeast) ▪ Uncertain policy duration and targets (MA, AZ) ▪ Lack of transmission planning (bottlenecks) ▪ Policies that are too complex and hard to manage

Source: Lawrence Berkley National Laboratory (DOE)

Enforcement, target stability and duration are key to a successful policy

- Sufficient duration and stability of targets *(provides market confidence)*
- Well-defined/stable resource eligibility rules *(ambiguity erodes confidence)*
- Credible & effective enforcement *(to ensure compliance)*
- Contracting standards/cost recovery for regulated utilities *(to ensure reasonable compliance effort, and long-term contracts)*
- Creditworthy long-term power purchasers *(to ensure new supply)*
- Stable political and regulatory support *(ambiguity erodes confidence, makes financing difficult)*

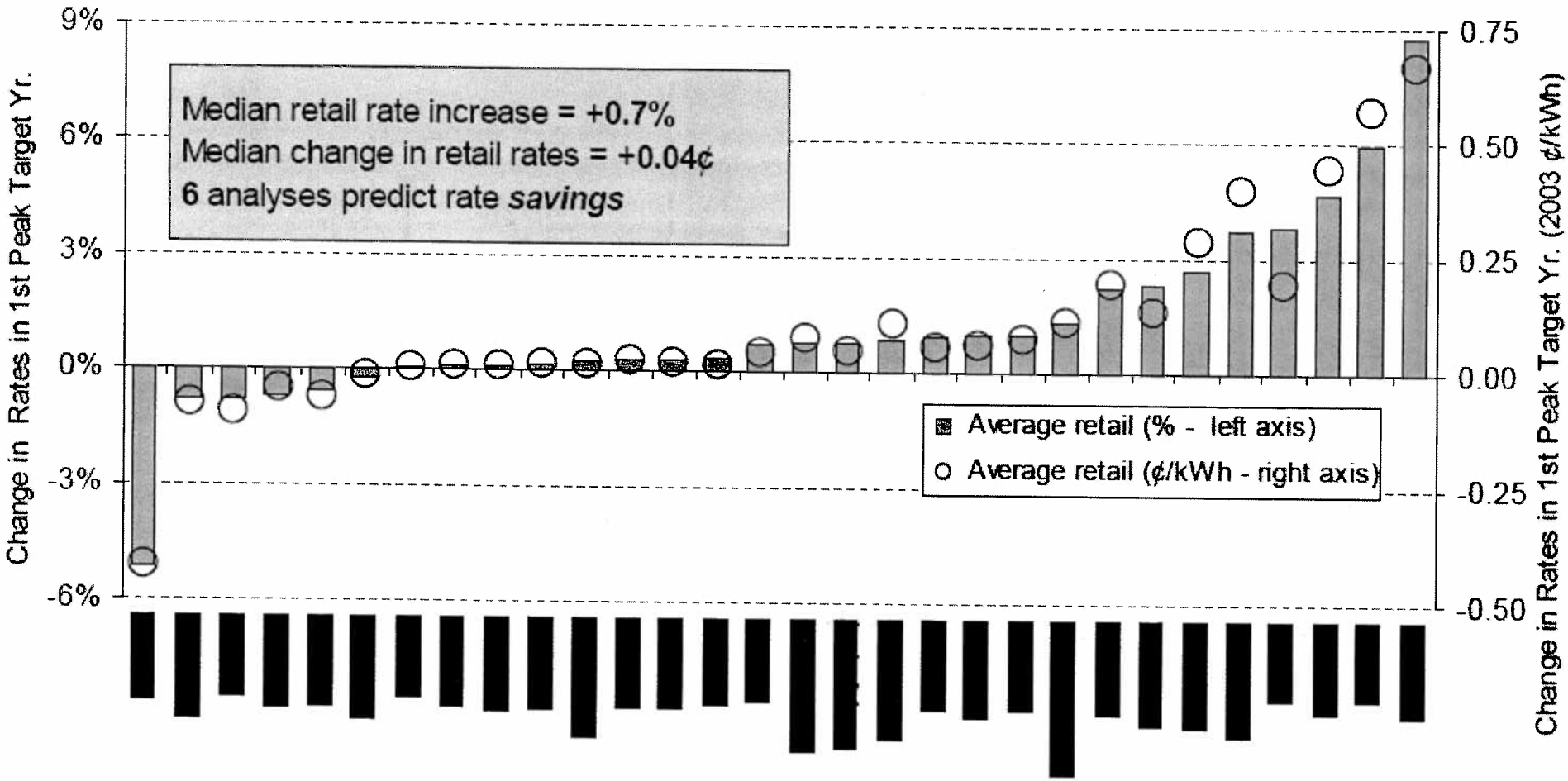
Source: Lawrence Berkley National Laboratory (DOE)

A New DOE Study Shows State Renewable Energy Standards are Affordable

- RES are generally expected to have minimal rate impacts
- Average monthly increase of just 38 cents for a typical residential household
- Seventy percent of studies show less than a 1% increase
- Six studies show cost savings for rate payers
- Higher cost scenarios are in states with very large amounts of solar development
- Price impacts on natural gas markets were not studied – which would likely further lower costs

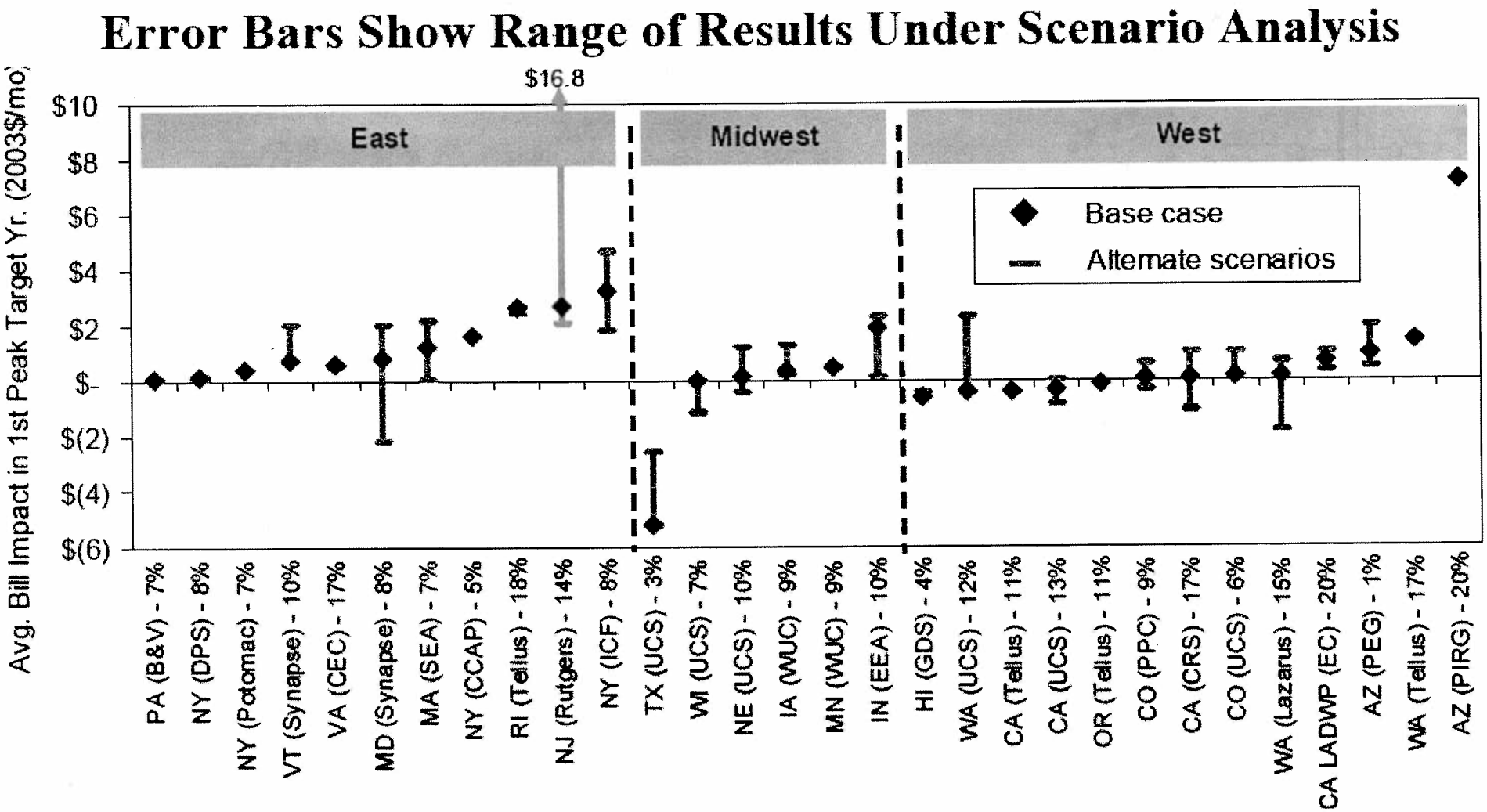
Chen, C., Wiser, R. and M. Bolinger, *Weighing the Costs and Benefits of State Renewables Portfolio Standards: A Comparative Analysis of State-Level Policy Impact Projections,* LBNL-61850, March 2007.
DOE's Lawrence Berkeley Laboratory

Twenty-one of thirty studies show a rate increase of less than 1% with 6 states showing rate decreases



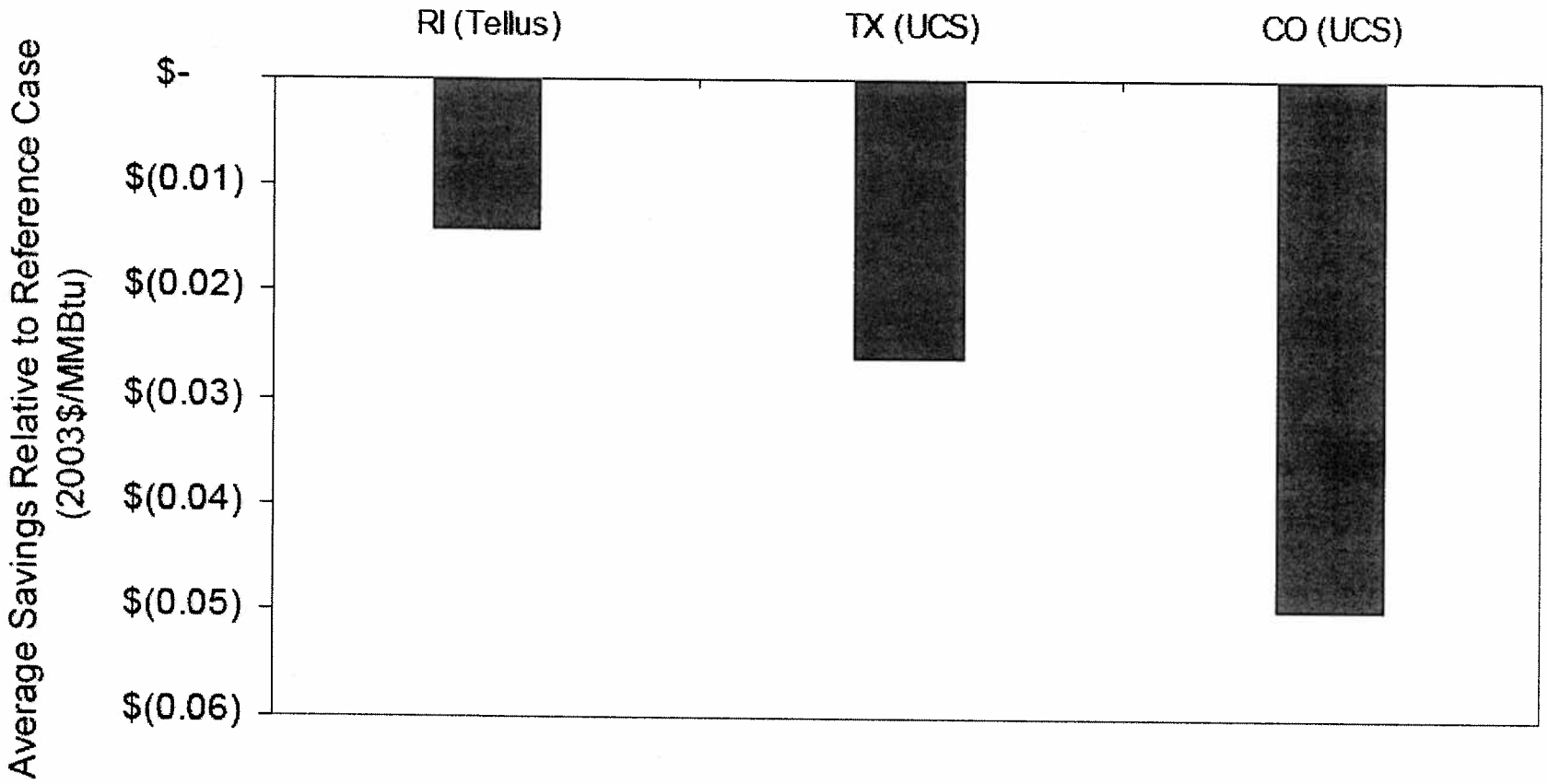
Source: DOE's Lawrence Berkley National Laboratory

Projected residential electricity bill Impacts are the lowest in the mid-west and west



Source: DOE's Lawrence Berkley National Laboratory

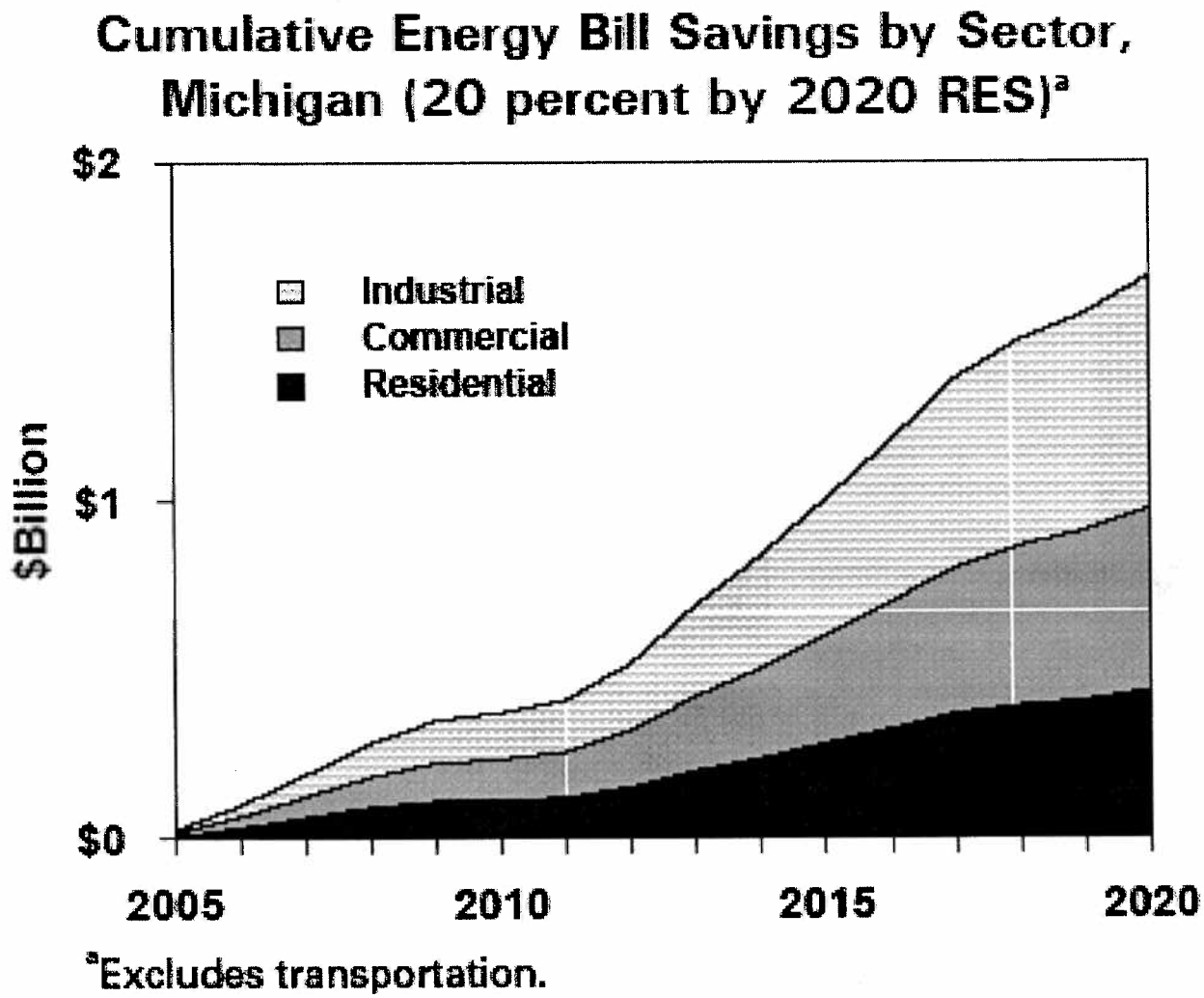
State RES Policies Put Downward Pressure on Natural Gas Prices



Note: NY (CCAP) and NY (ICF) also model NG price reductions but do not provide detailed data

Source: DOE's Lawrence Berkley National Laboratory

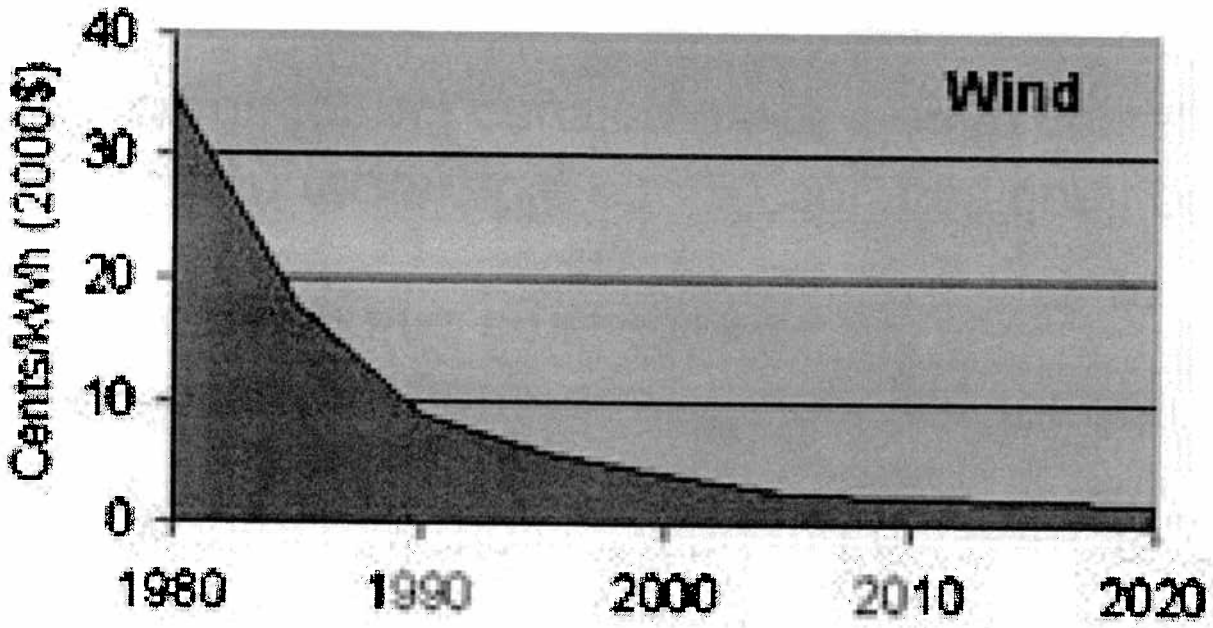
A Union of Concerned Scientist study shows a 20 % by 2020 RES would save billions for rate payers

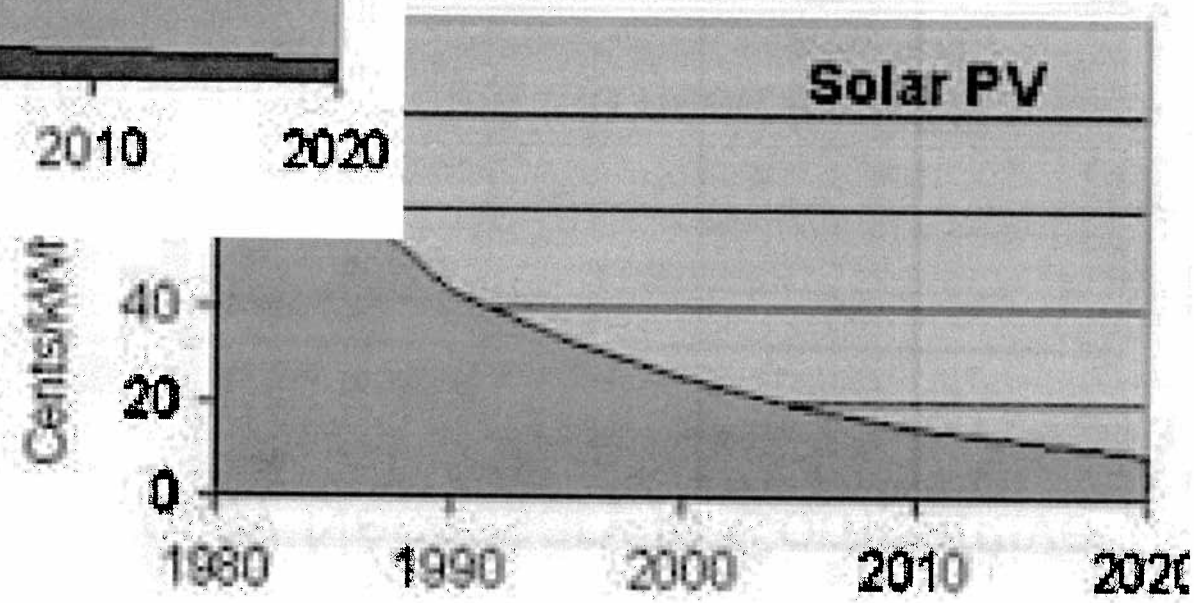


Source: Union of Concerned Scientist study of RPS in Michigan

Renewable Technology Costs will Decline as Fossil Fuel Risk Increases

Figure 2. Renewable Energy Cost Reductions





Source: DOE, UCS

Why Is Renewable Energy Policy Necessary in Competitive Markets?

- No market is perfectly competitive
- Market externalities and market barriers create the need for RES
- Fossil fuel generators do not pay for damage caused by their pollution and emissions
- Clean renewable energy sources don't pollute but don't receive credit for not causing harm, health costs, mercury pollution, etc
- Financing for capital-intensive renewable energy projects is difficult to obtain without long-term contracts and market stability

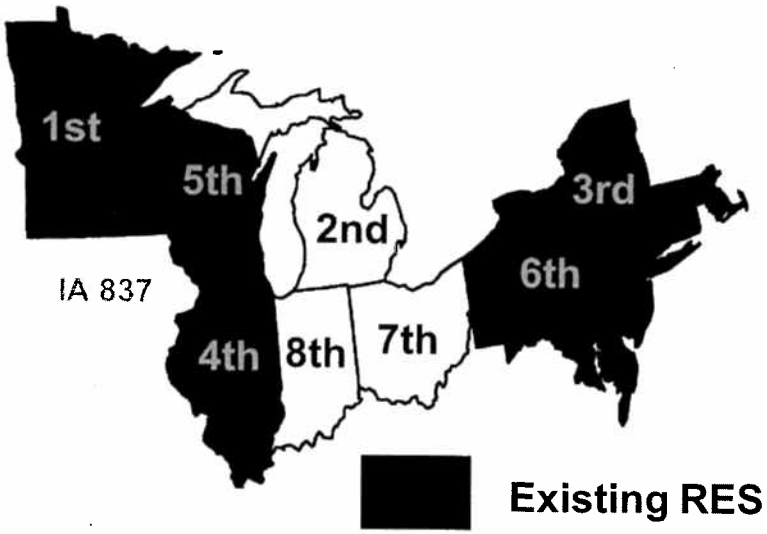
Source: UCS, AWEA

Michigan is falling behind Great Lakes States in Renewable Energy Generation

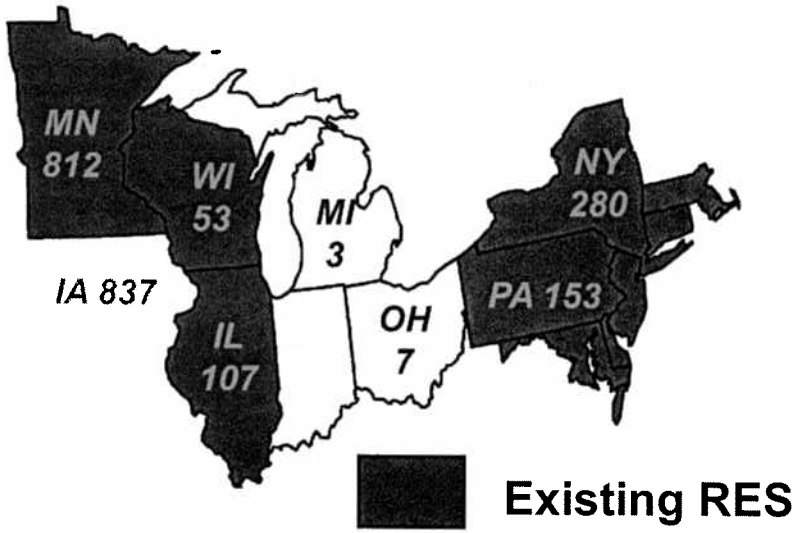
- Our neighbors with a RES are already benefiting from job creation and cleaner air because of their commitment to renewables.

  Michigan has significant renewable potential (ranks 2nd in the region for wind generation potential), but has not yet acted.

Great Lakes Basin
On-Shore Wind Energy Potential (ranking) **

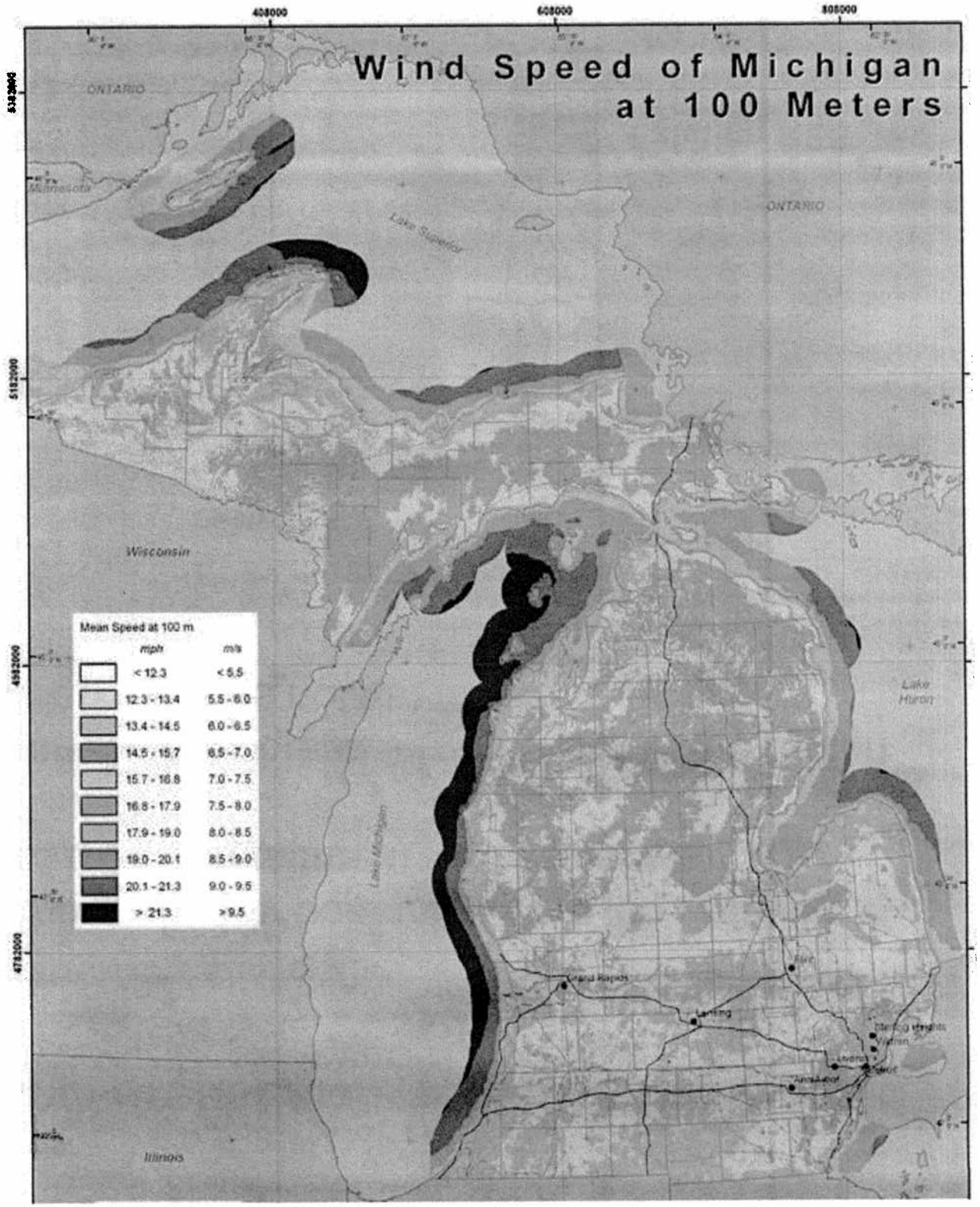


Great Lakes Basin
<u>Installed</u> Renewable Wind Power (MW)*



Michigan Wind Potential

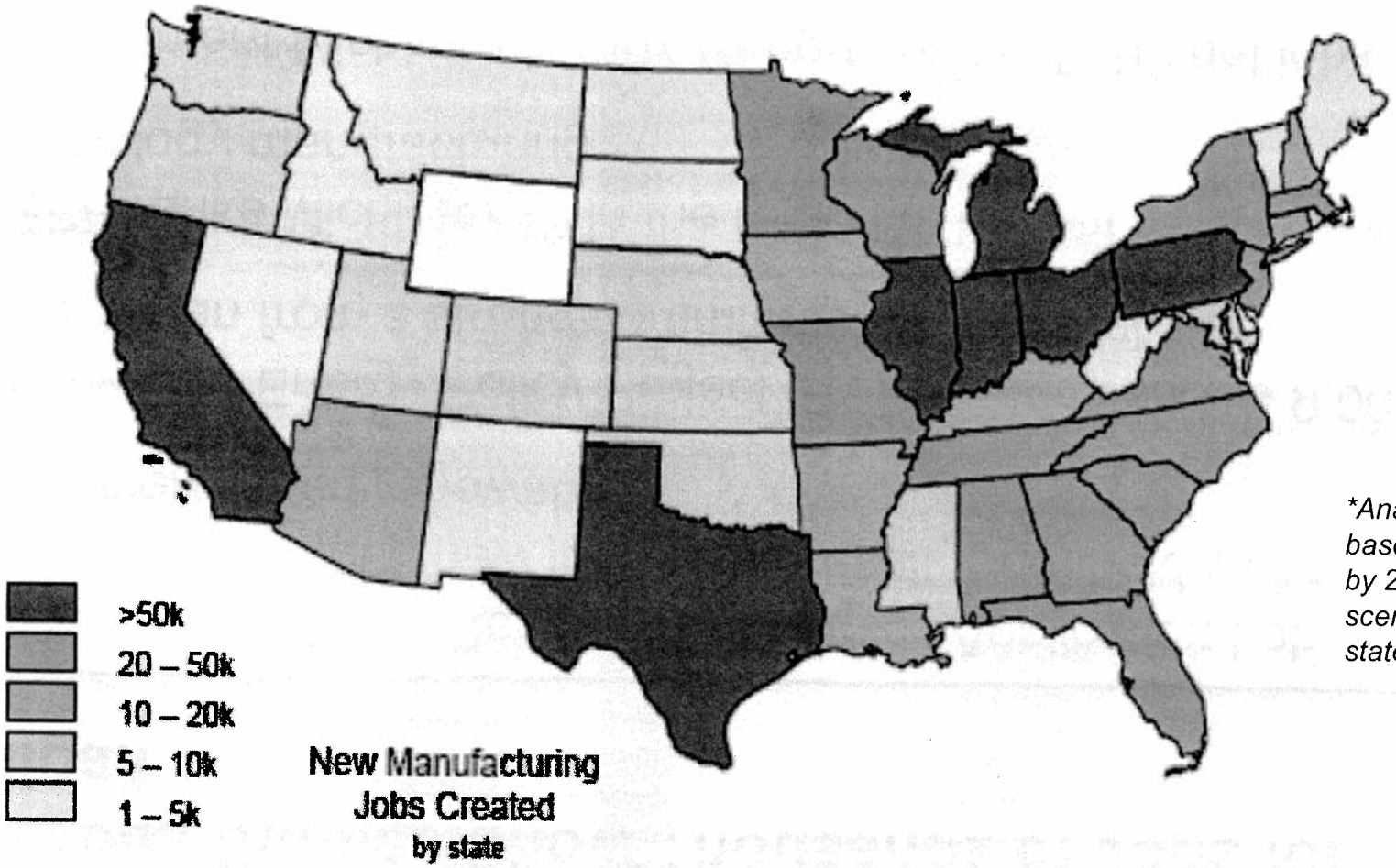
- Evaluating MI's wind potential at 100meters doubles the class 4 and higher wind sites
- Efficiency levels are likely higher than expected
- Better wind potential = cheaper costs and more electricity generated per turbine



Source: NREL, True Wind

Michigan is uniquely positioned to benefit from renewable energy job creation

- Michigan is top 6 states in the country to benefit from renewables development
- Over 50,000 manufacturing jobs could be created from wind alone



**Analysis is based on a 20% by 2020 RES scenario for all states*

ource: DOE, 1) Source: Wind Energy Works Collaboration (Union of Concerned Scientist, National Renewable Energy Laboratory, US Department of nergy – Renewable Energy & Energy Efficiency, American Wind Energy Association)

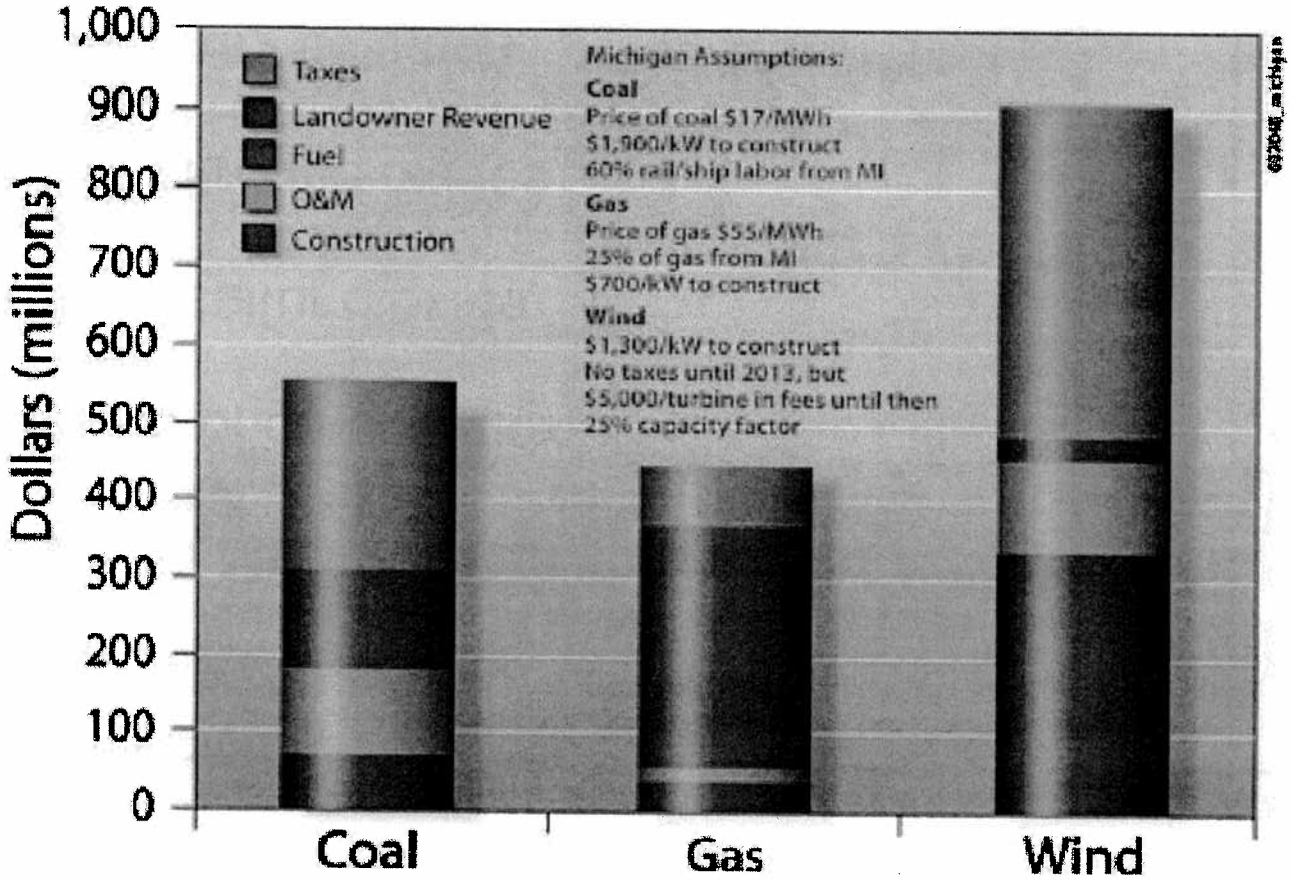
Numerous Studies Show Thousands of Jobs for Michigan

- University of Illinois Regional Economics Application Laboratory determined 38,000 new jobs could result from bold commitments to efficiency and renewables
- Renewable Energy Policy Project (REPP) study shows 9,000 jobs in Michigan from a strong commitment to renewables
- REPP ranks Michigan 4th in the region to benefit from renewable technology manufacturing
- Environment Michigan's 2007 Report shows 7,000 net jobs from clean energy
- A Union of Concerned Scientist study shows almost 3,000 net jobs (over a coal scenario) from a national 20% by 2020 RES (twice the expected impact from coal and nuclear)
- *Future Studies*: Next Energy, University of Michigan, REPP

Source: REPP

Wind Power brings the largest direct benefit to the state

Direct Economic Benefit to the Economy from New Generation in Michigan (Revenues)[2]



Source: Renewable Energy Policy Project

A RES would Drastically Reduce Pollution and Greenhouse Gas Emissions

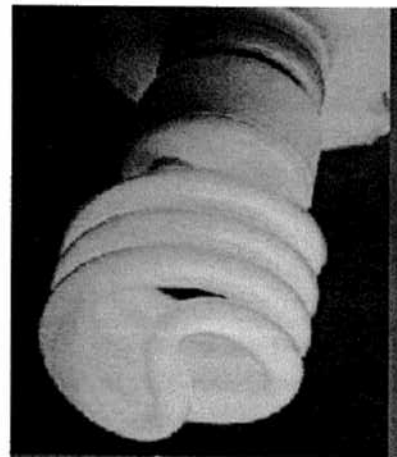
Example:

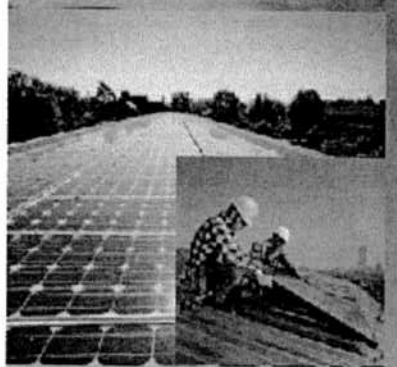
A single 1.65 MW wind turbine would replace

- 2,700 tons of carbon dioxide
- 14 tons of sulfur dioxide
- 9 tons of nitrogen oxides
- Toxic mercury pollution
- A forest of 1.5 square miles would be need to absorb the same CO_2

7.7million Michiganders live in places where the air is literally unsafe to breathe

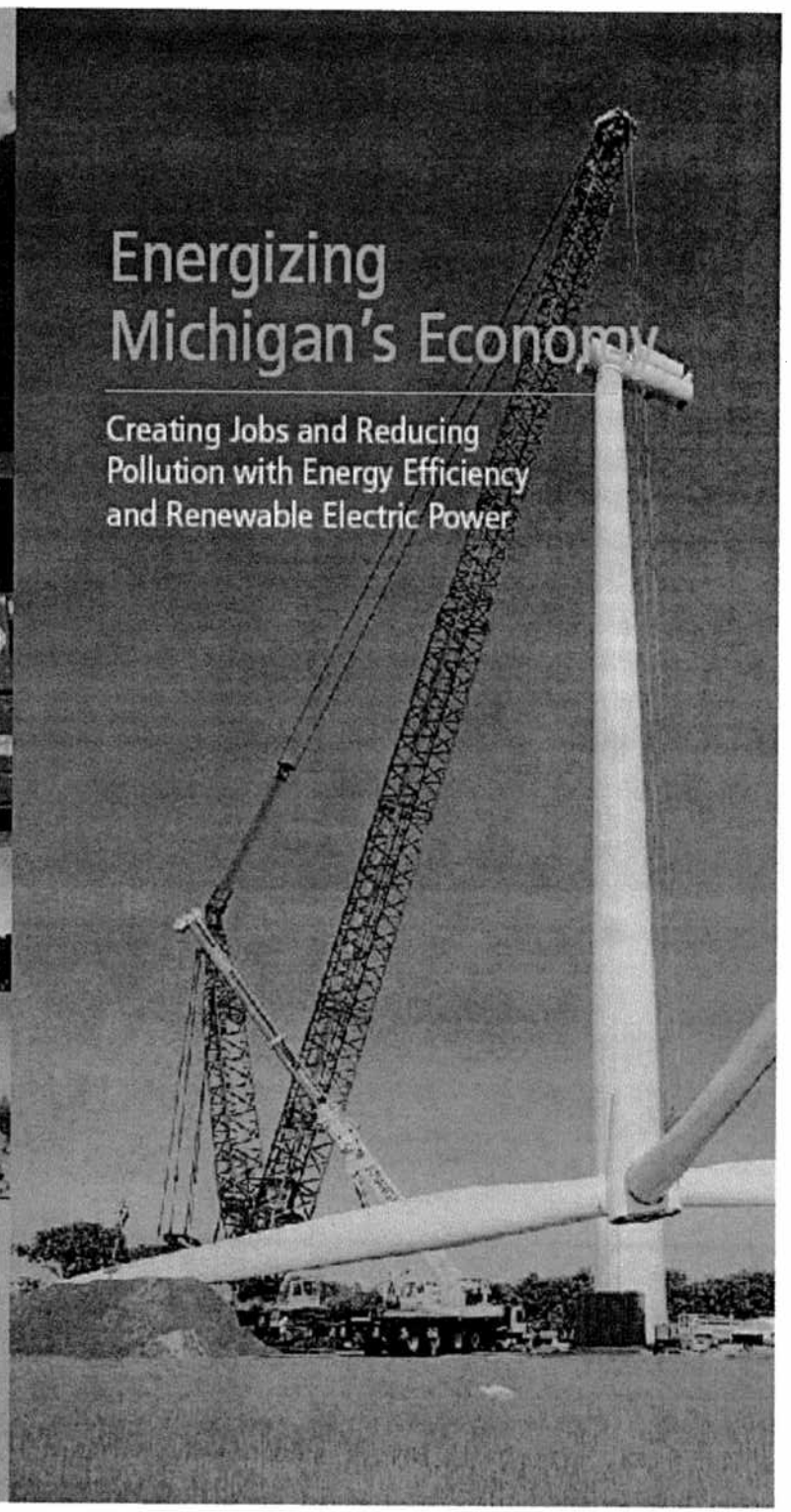
Source: AWEA, EPA





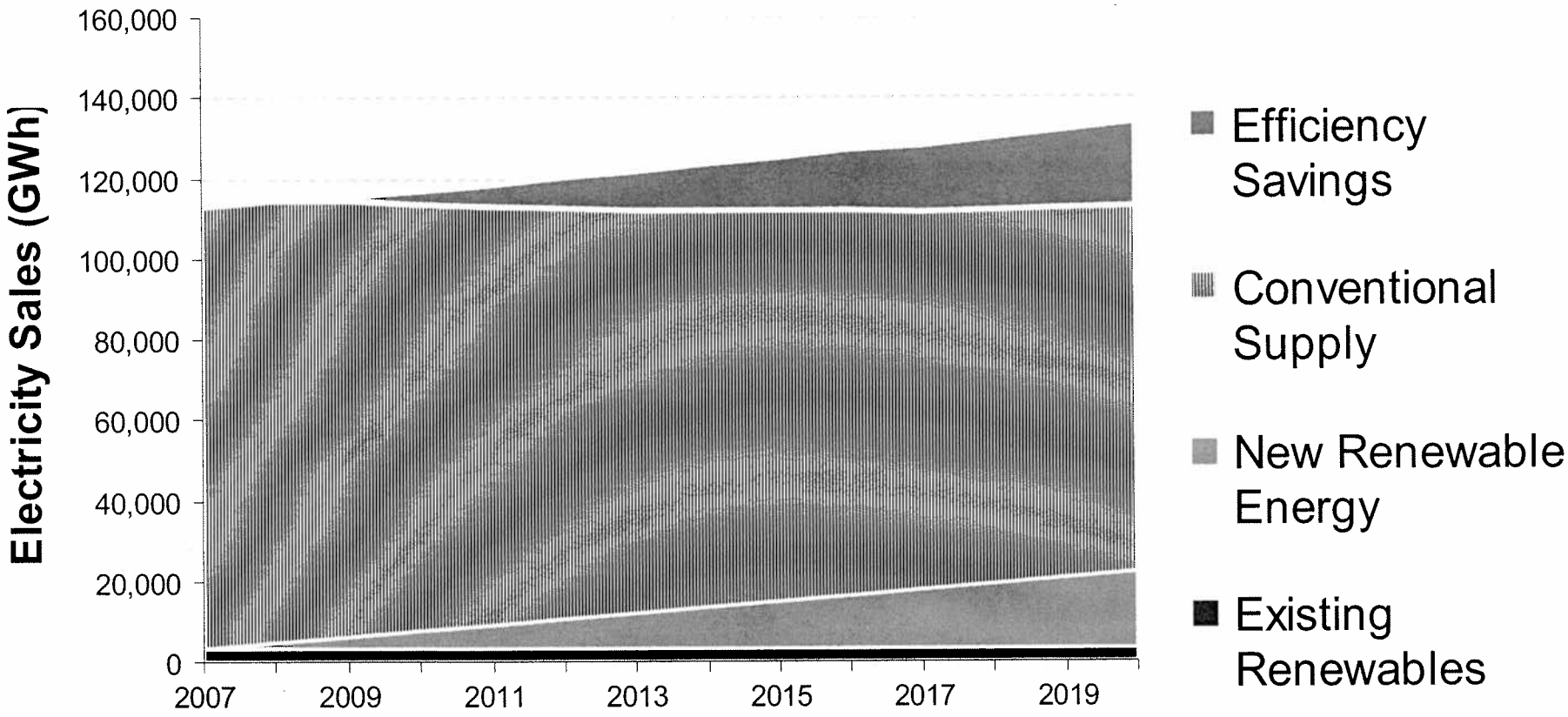
Energizing Michigan's Economy

Creating Jobs and Reducing Pollution with Energy Efficiency and Renewable Electric Power

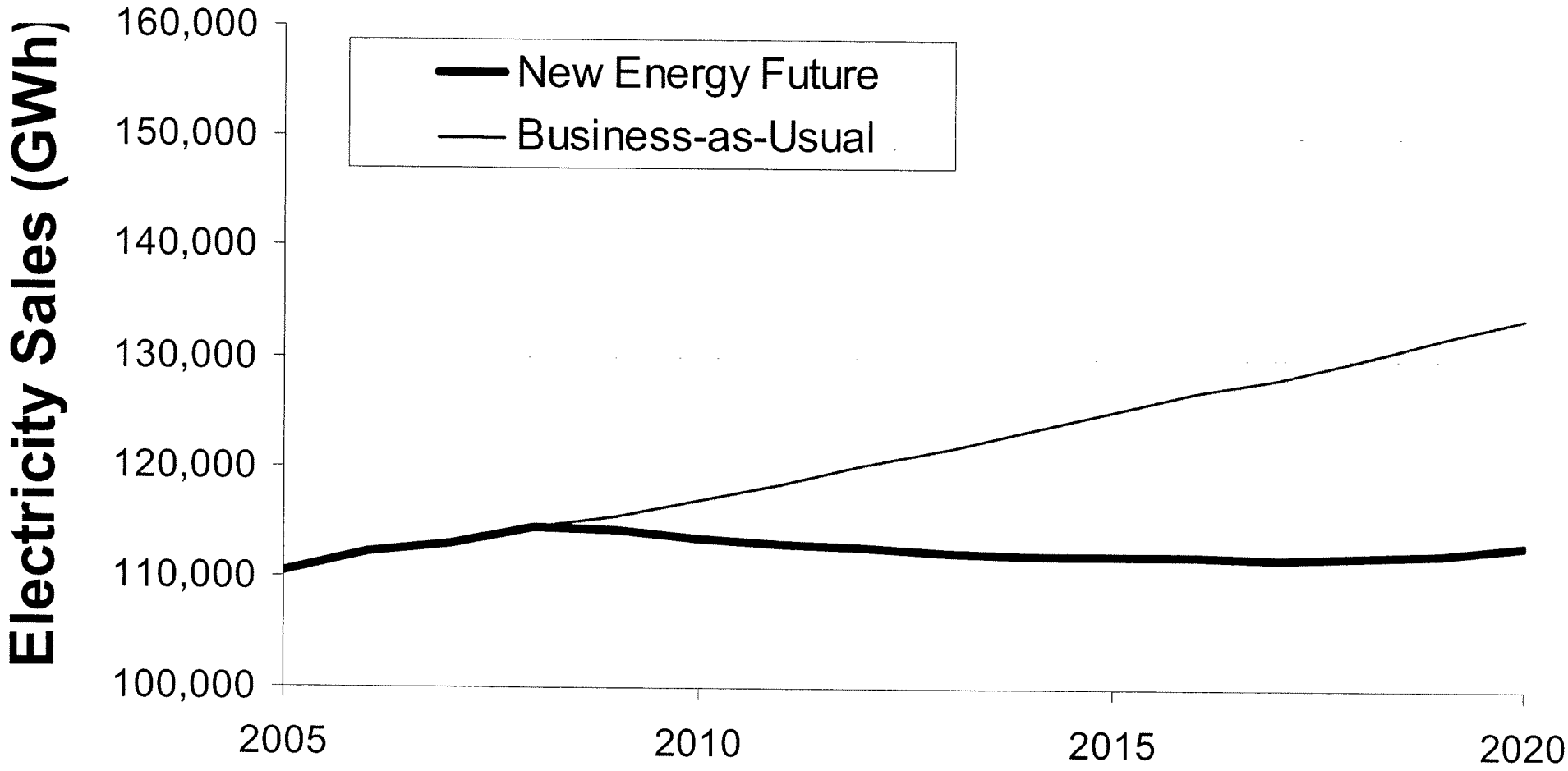


Environment Michigan Research & Policy Center

New Energy Future Path



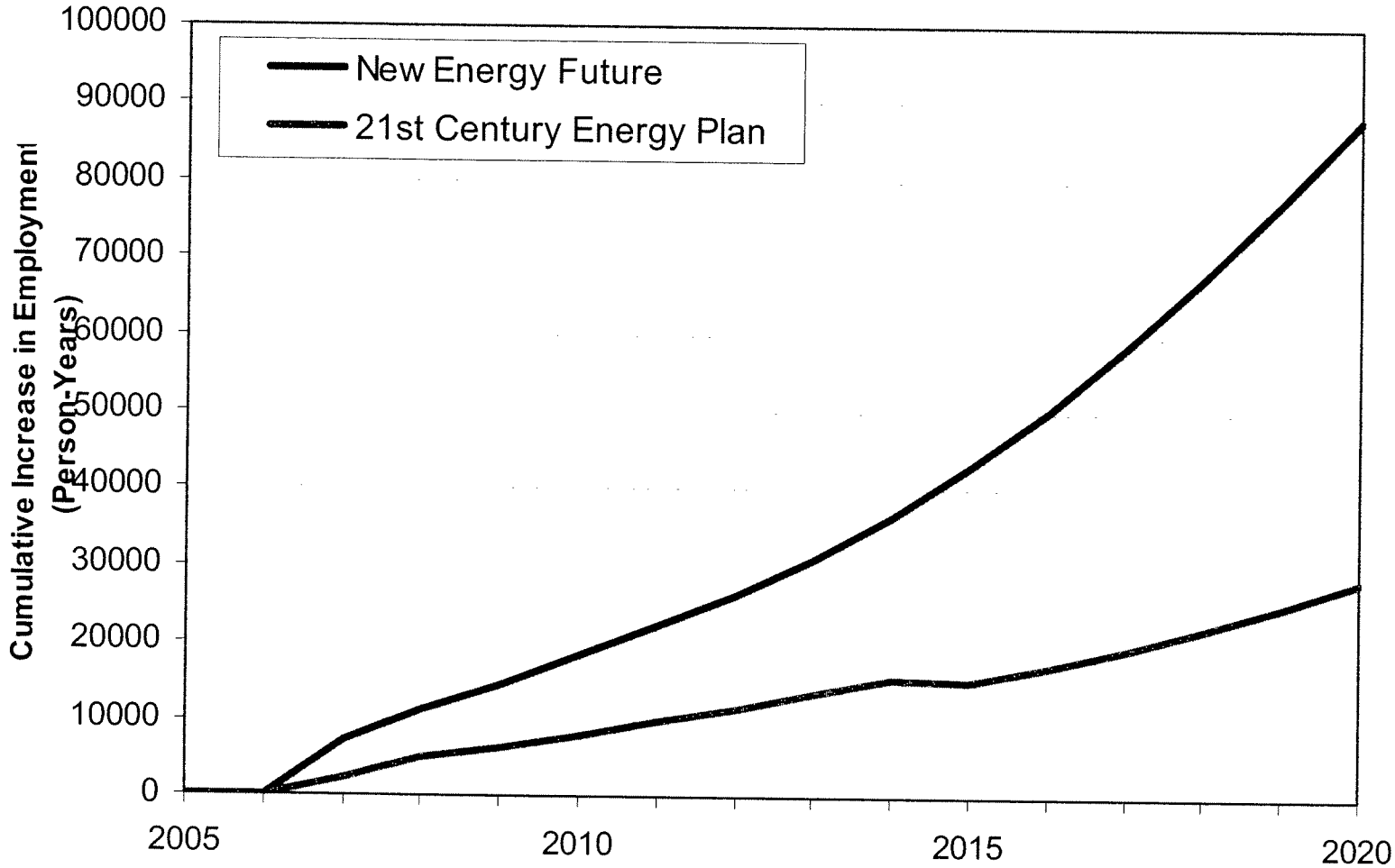
Energy Efficiency Stops Demand Growth



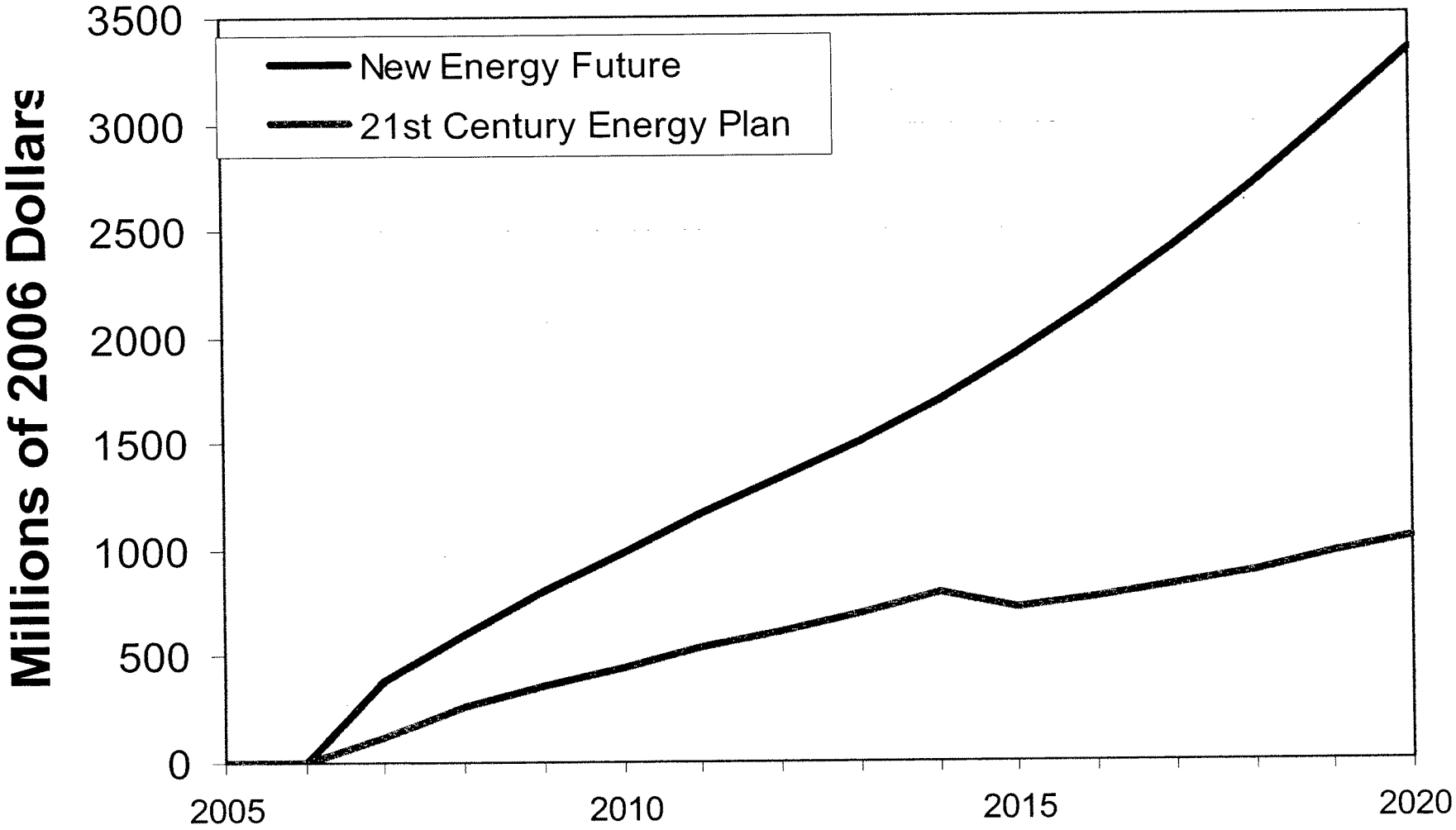
Renewable Potential is Barely Being Tapped

Energy Source	Electricity Generation Potential (GWh / year)	Percent of Michigan's 2005 Total Energy Demand
Wind (Onshore, 50m, Excluding Class 3)	2,200	2%
Wind (Onshore, 50m, Including Class 3)	31,000	27%
Wind (Offshore)	150,000	130%
Biomass (Currently Available Stocks)	14,000	12%
Solar (PV panels on 7 percent of built-up land area)	38,000	33%

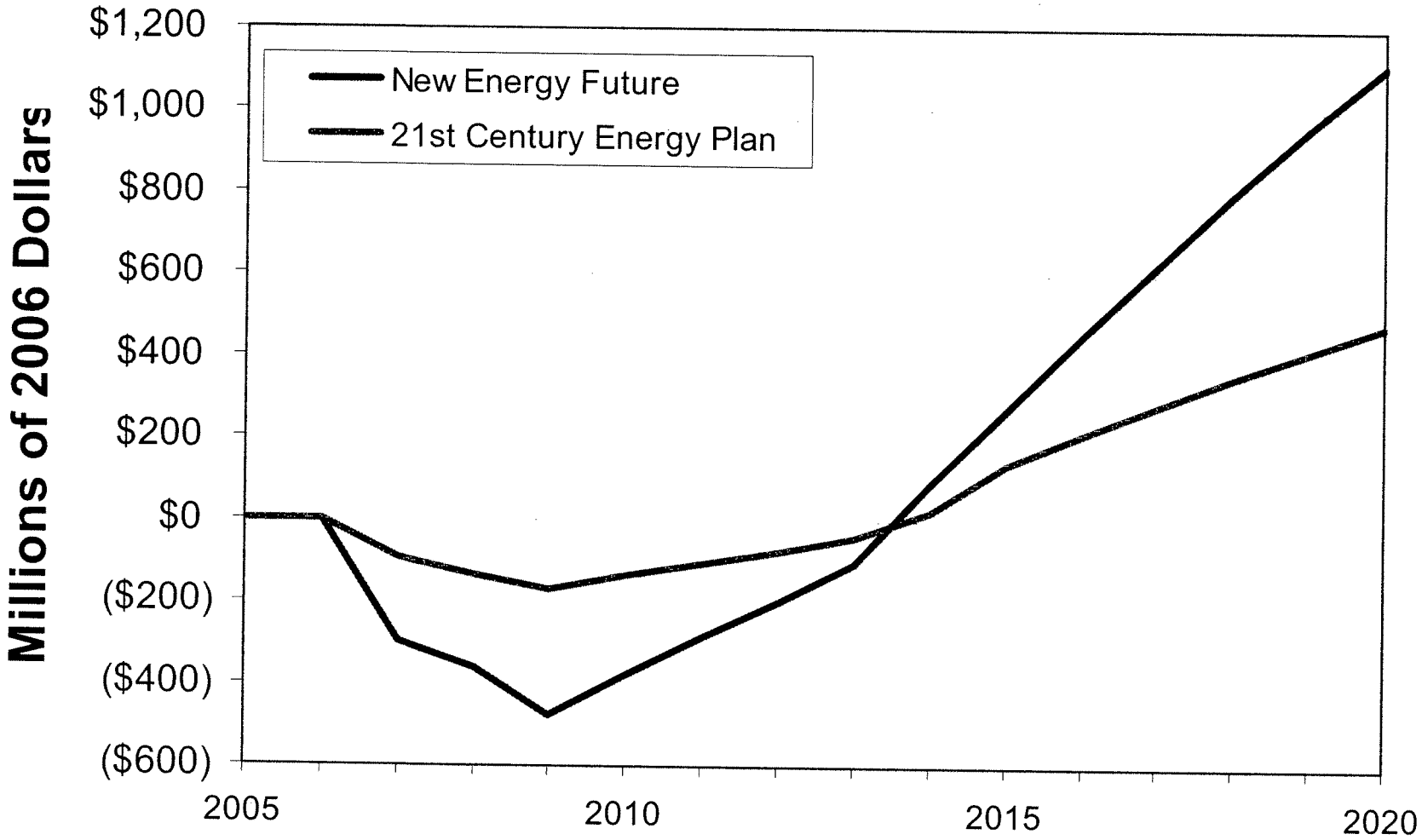
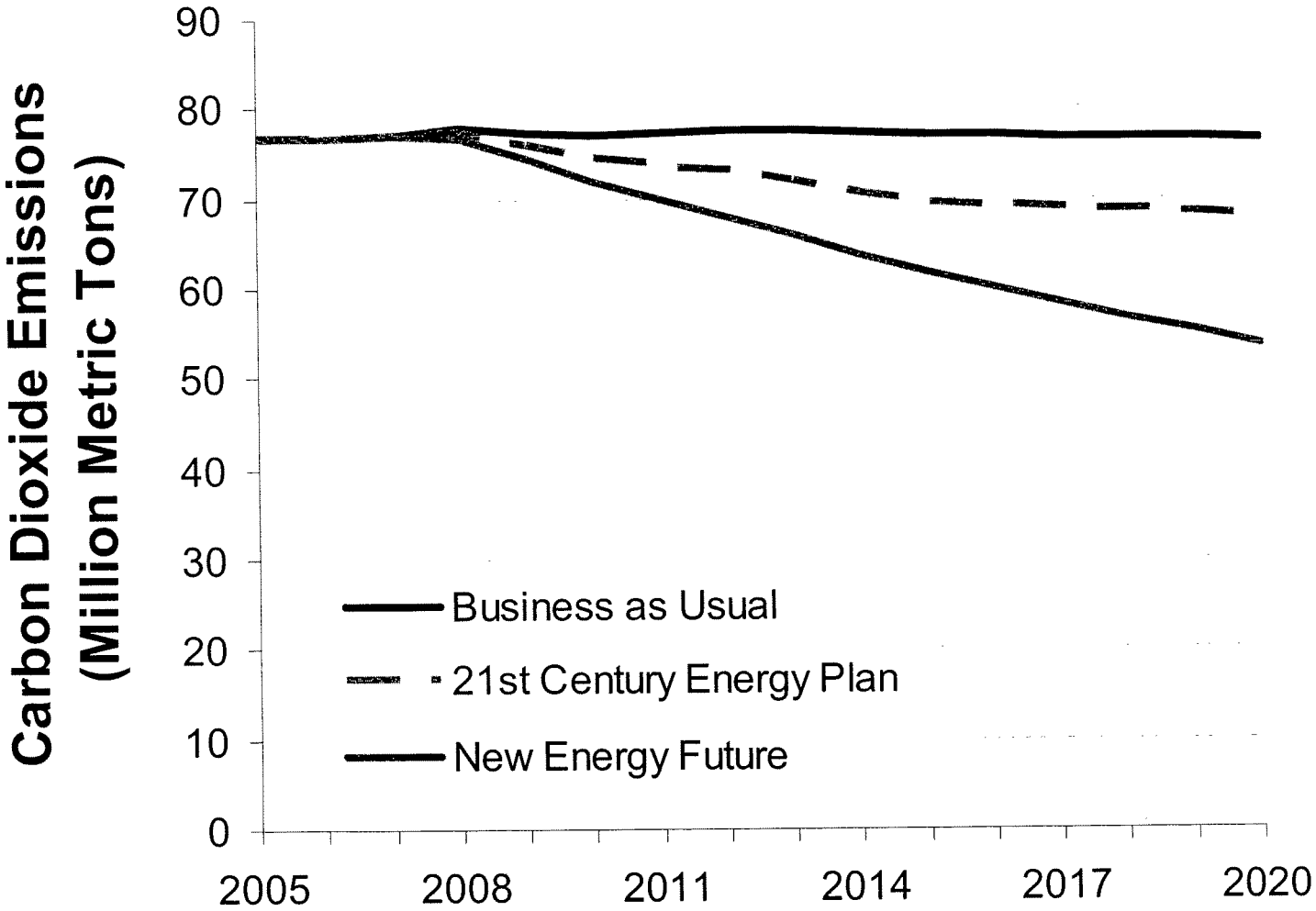
Clean Energy Creates High Tech, Skilled Jobs



Clean Energy Increases Wages Paid



Clean Energy Saves Consumers Money



Clean Energy Reduces Pollution