

State Climate Leadership: *How (and Why) States Are Acting on Climate Change*

**COP9 – Milan, Italy
06 December 2003**



**Ken Colburn, Executive Director
NESCAUM**

kcolburn@nescaum.org

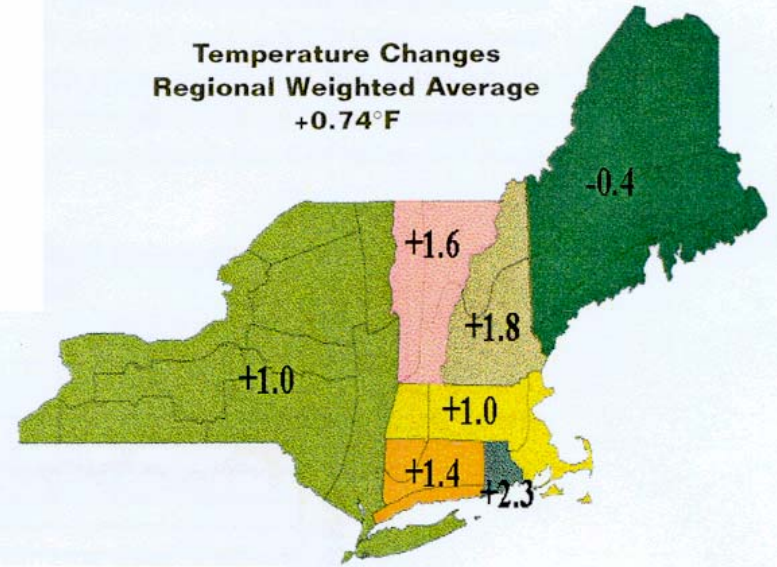
Why Are States Acting?

- **Defensively:**
 - Sense of urgency; exposure to climate risks
 - Protecting existing economies
- **Offensively:**
 - Learning curve; early adopters secure competitive advantage
- **Aggressively** to protect:
 - Public Health
 - Quality of Life
- Significant **relative impact**
- **Prior success** leading by example

Temperature Change in the Northeast 1895-1999

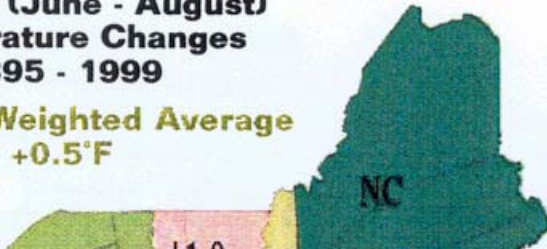
(Source: NERA, 2001)

Temperature Changes
Regional Weighted Average
+0.74°F



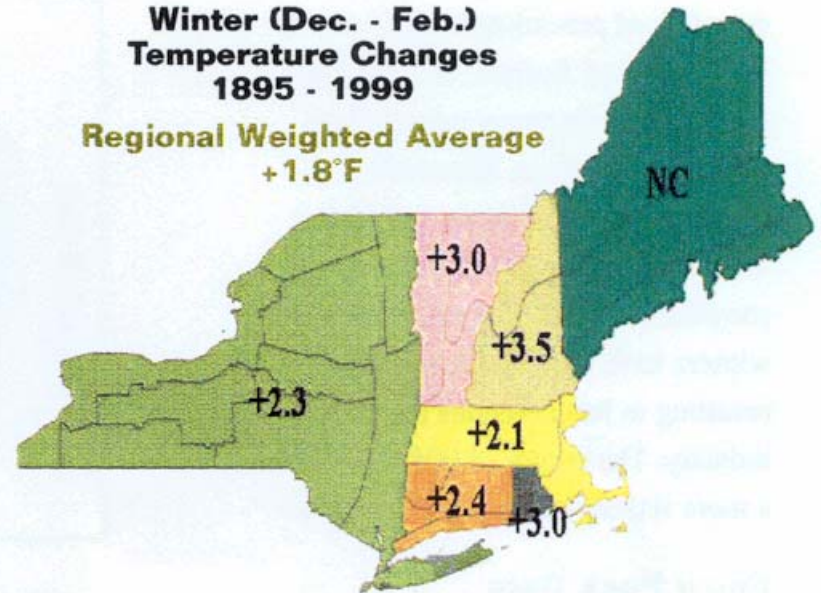
Summer (June - August)
Temperature Changes
1895 - 1999

Regional Weighted Average
+0.5°F



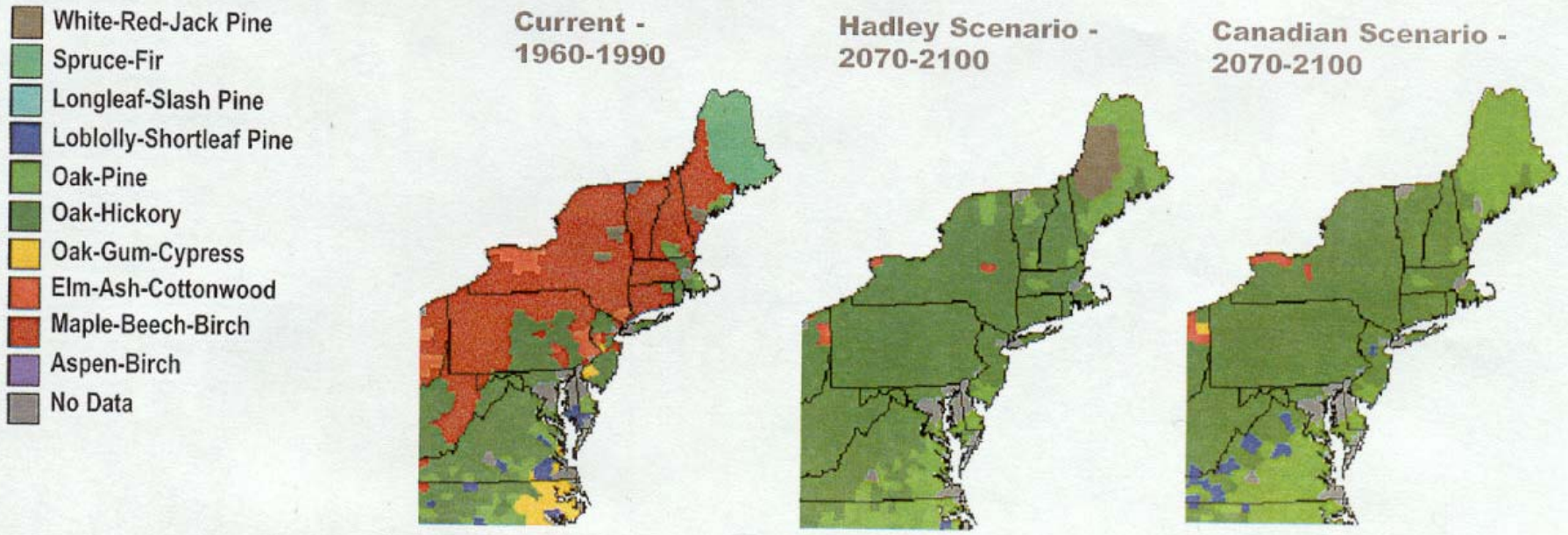
Winter (Dec. - Feb.)
Temperature Changes
1895 - 1999

Regional Weighted Average
+1.8°F



**Impacts to skiing,
snowmaking,
snowmobiling,
ice fishing, etc.?**

Changes in Dominant Forest Types Under Two Climate Scenarios



Source: U.S. Global Change Research Program

***Impacts to forest products industry,
paper making, foliage season,
maple sugaring, hunting habitat, etc.?***

Overlap with Criteria Pollutants (Particulate Matter, Ozone, etc.)



Burlington VT $PM_{2.5}$ 7/7/02

FRM : 61.4 ug/m^3

Duplicate FRM: 62.6 ug/m^3

CAMM 24-hr mean: 61.9 ug/m^3

**And this is not an
Exceedance Day!
Clear Skies?**



Visibility Impairment in New Hampshire's White Mountains:

Mt. Jefferson photographed from AMC's Camp Dodge at near natural conditions (6 deciviews) and at 90+ percentile haze (28 deciviews)

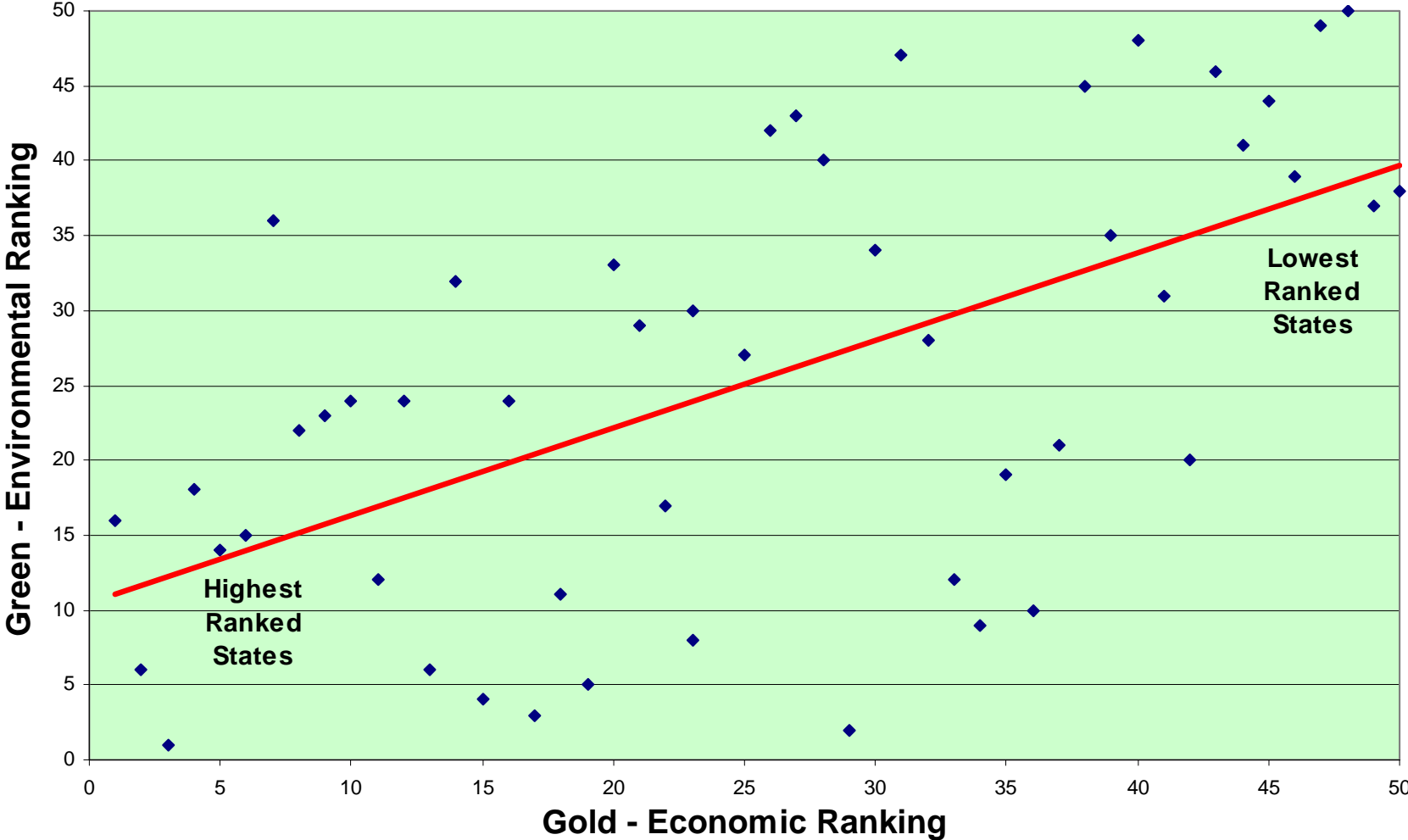


Source: Appalachian Mountain Club

Tourism is one of the region's largest industries, with billions of dollars direct economic impact annually...

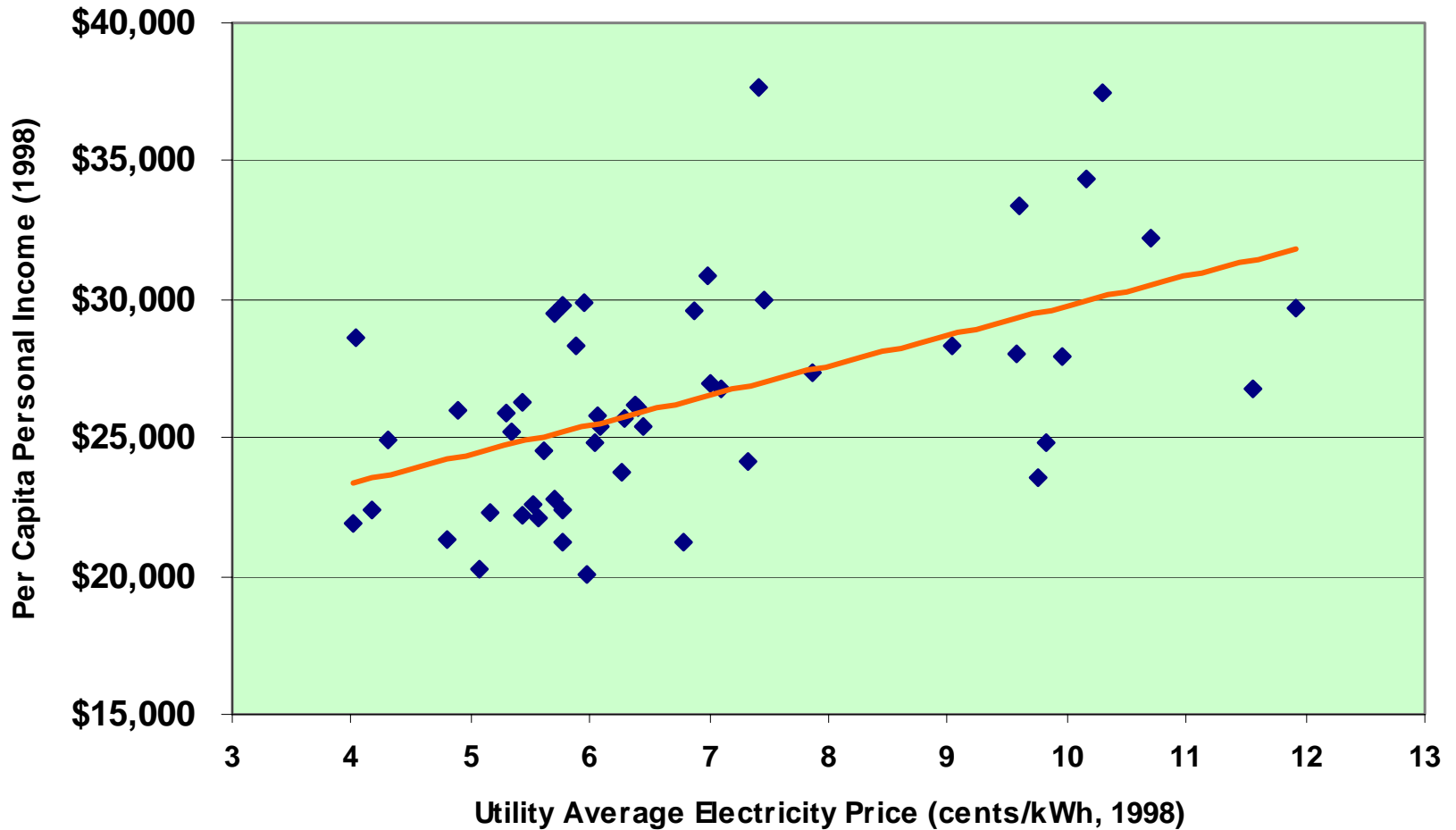
Green & Gold 2000 - Rankings of States

Data Source: Institute for Southern Studies, 2000



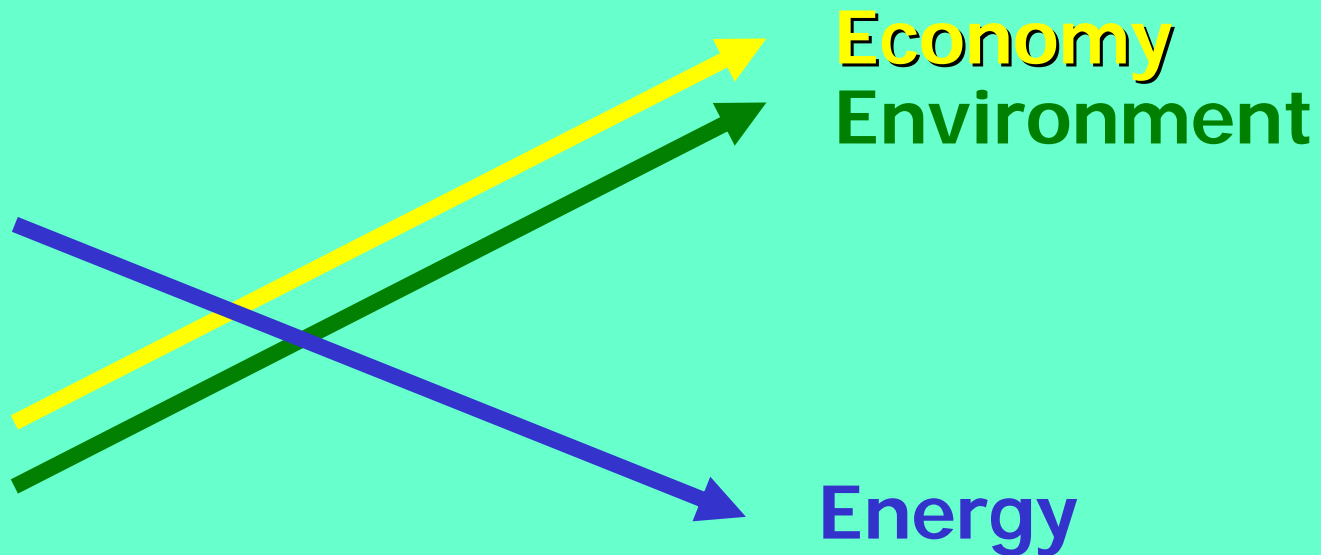
Per Capita Personal Income versus Utility Average Electricity Price for the 50 States and Washington, DC

(Data Sources: US Department of Commerce, Bureau of Economic Analysis
US Energy Information Administration)



An Economic Sea Change is Underway

New Paradigm:

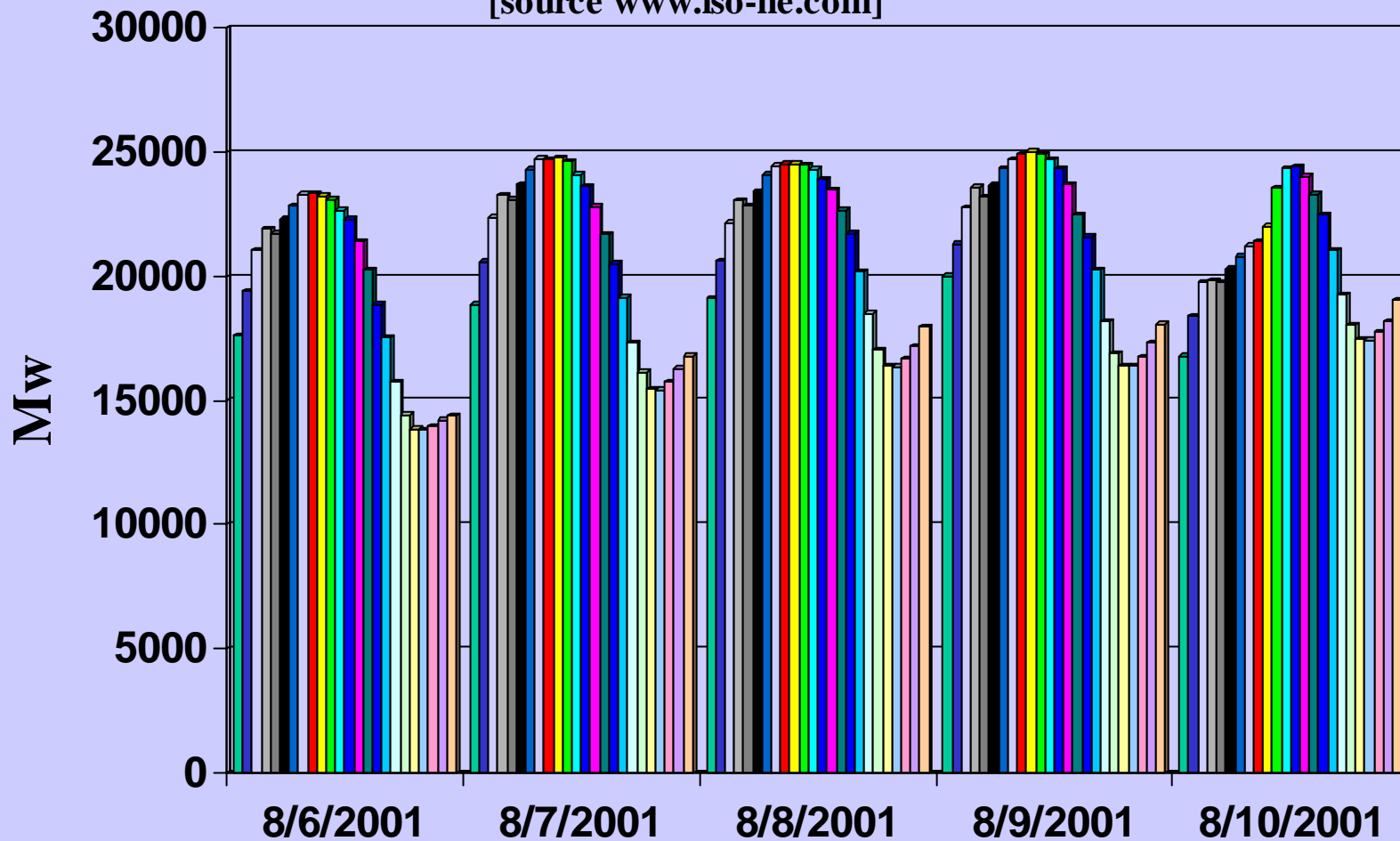


Evidence of an Economic Sea Change

- *ACEEE*: Energy/GDP **fell** 42% from 1970-1999
- States with higher electric rates often have:
 - Low poverty rates; low unemployment; high PCI
 - High growth in jobs, businesses, & Per Capita Income
- *Global Business **Competitiveness***:
 - **Power Quality & Reliability** increasingly important
 - Bank of Omaha (chose fuel cells); semiconductor manufacturers
 - Companies need to reduce **vulnerability** to price shocks, supply disruptions, etc. (CA, Northeast, EU, etc.)
 - Basis of financial performance and international competitiveness is changing (**"Triple Bottom Line"**)
 - Economic opportunity: **"Who will own the patents?"**
 - **Dollar cost savings** that energy efficiency provides

ISO-NE Load

[source www.iso-ne.com]



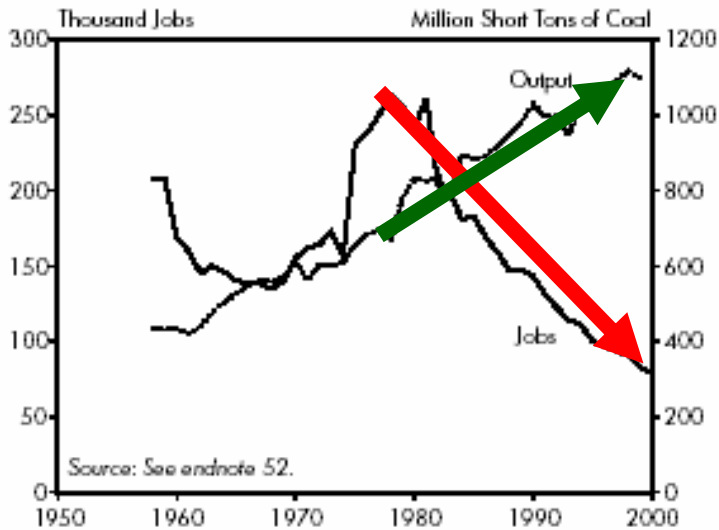
Employment & Energy Supply: Renewables Favor Environment AND Jobs

Germany, Electricity Market Share, 1998

Generation Source	Generation Market Share	Jobs Supported	Jobs per 1% Market Share
Wind	1.2%	15,000	12,500
Nuclear	33%	38,000	1,152
Coal	26%	80,000	3,077

Source: *Working for the Environment*, Worldwatch Institute, Working Paper 152, September 2000.

U.S. Coal Mining, Output and Jobs, 1958-2000



Are We Wedding Ourselves to Energy Technologies of the Past...

Mining Employment in Selected Countries, 1988-97

Country	1988 (thousands)	1997	Change (percent)
China ¹	8,320	8,510	+ 2.3
India ²	1,049	1,100	+ 4.9
Ukraine	856	635	- 25.8
Brazil ²	824	710	- 13.8
South Africa ⁴	733	562	- 23.3
United States	713	592	- 17.0
United Kingdom	187	65	- 65.2
France	88	52	- 40.9

Note: Includes coal- and metals-mining and oil and gas extraction jobs. ¹Employment peaked at 9.25 million in 1993. ²Data are for 1988 and 1996. ³Data are for 1992 and 1996. ⁴Data are for 1988 and 1993.

Output and Employment Changes in Selected Industries

Industry	Country	Time Period	Output Change [percent]	Employment Change
Oil & gas production	United States	1980-99	<u>- 28¹</u>	<u>- 52</u>
Oil refining	United States	1980-99	<u>+ 16</u>	<u>- 38</u>
Chemicals	European Union	1990-98	+ 25	- 14
Electricity generation	Germany	1991-98	+ 5	- 25
Primary metals processing	United States	1979-99	<u>+ 15</u>	<u>- 40</u>
Steel	European Union, North America, Japan, and four others ²	1974-99	- 0.6	- 21
Forest products	Sweden	1980-99	+ 17	- 50

¹Decline in oil production; natural gas production dipped just slightly.

²Other countries included are Brazil, South Africa, South Korea, Australia.

TABLE 5

Job Impact Findings, Selected Studies on Climate Policy

Country	Policy Change	Years	Carbon Reduction (million tons)	Employment Gain (net number of jobs)
Austria	Cogeneration, energy efficiency, renewables, alternative transportation	1997-2005	70	+ 12,200
Austria	Biomass, higher taxes on fossil fuels	1997-2005	20	+ 30,000
Denmark	Greater natural gas use, district heating, co-generation, energy efficiency, renewables; total energy consumption stable	1996-2015	82	+ 16,000
Germany	Boosting efficiency, phasing out nuclear power, less oil and coal use, renewables to account for 10 percent of primary energy	1990-2020	518	+ 208,000

**...Or to the
Energy Technologies
of the Future?**

United States	Improved efficiency in transportation, industry, power generation, buildings	1990-2010	188	+ 870,000
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Kingdom	generation, efficiency, and renewables technologies	2010		
European Union	Installation of high-performance double-pane windows in 60 percent of dwellings	10-year period	940	+ 126,000
United States	Improved efficiency in transportation, industry, power generation, buildings	1990-2010	188	+ 870,000

Source: See endnote 83.

Source: *Working for the Environment*, Worldwatch Institute, Working Paper 152, September 2000.

Economics 101: Factors of Production

Factor	BAU	EE/RE
Man (Labor)	—	+
Machine (Capital)	+	—
Material (Raw Material)	+	—
Method (Technology)	—	+
Time-to-Market	—	+
“6 Sigma” Quality	—	+
Security & Certainty	—	+
“Ecosystem Services”	—	+

“Place” Matters More in the New Economy

In an economy where physical assets are not as important as they used to be, where intellectual assets dominate, where business can be conducted from anywhere to anywhere, ***it would seem that place should not matter; in fact, it matters more.*** ... Places – through the ***quality of life*** they offer – matter because entrepreneurs and highly skilled and sought-after workers want to live in areas with educational, cultural, ***natural*** and civic amenities.¹ [*emphasis added*]

¹ NetworkNH (a consortium of high tech companies), *NH in the 21st Century, Competing in the New Economy*, December 1, 2000, p. 16. See <http://www.network.com>

States Grasp the New Economics of Environment & Energy

And are acting on it...

- **New England** (NEG/ECP)
- **NH** (4-P Legislation; Registry)
- **MA** (4-P regulation)
- **CA** (Pavley, Renewable Energy Mandate, Climate Action Registry)
- **WI, ME** (Registry, Mandatory Reporting)
- **NJ** (Voluntary Climate Effort; PSEG Settlement)
- **NY** (State Action Plan; Reduction Commitments?)

On a national basis, these states represent:

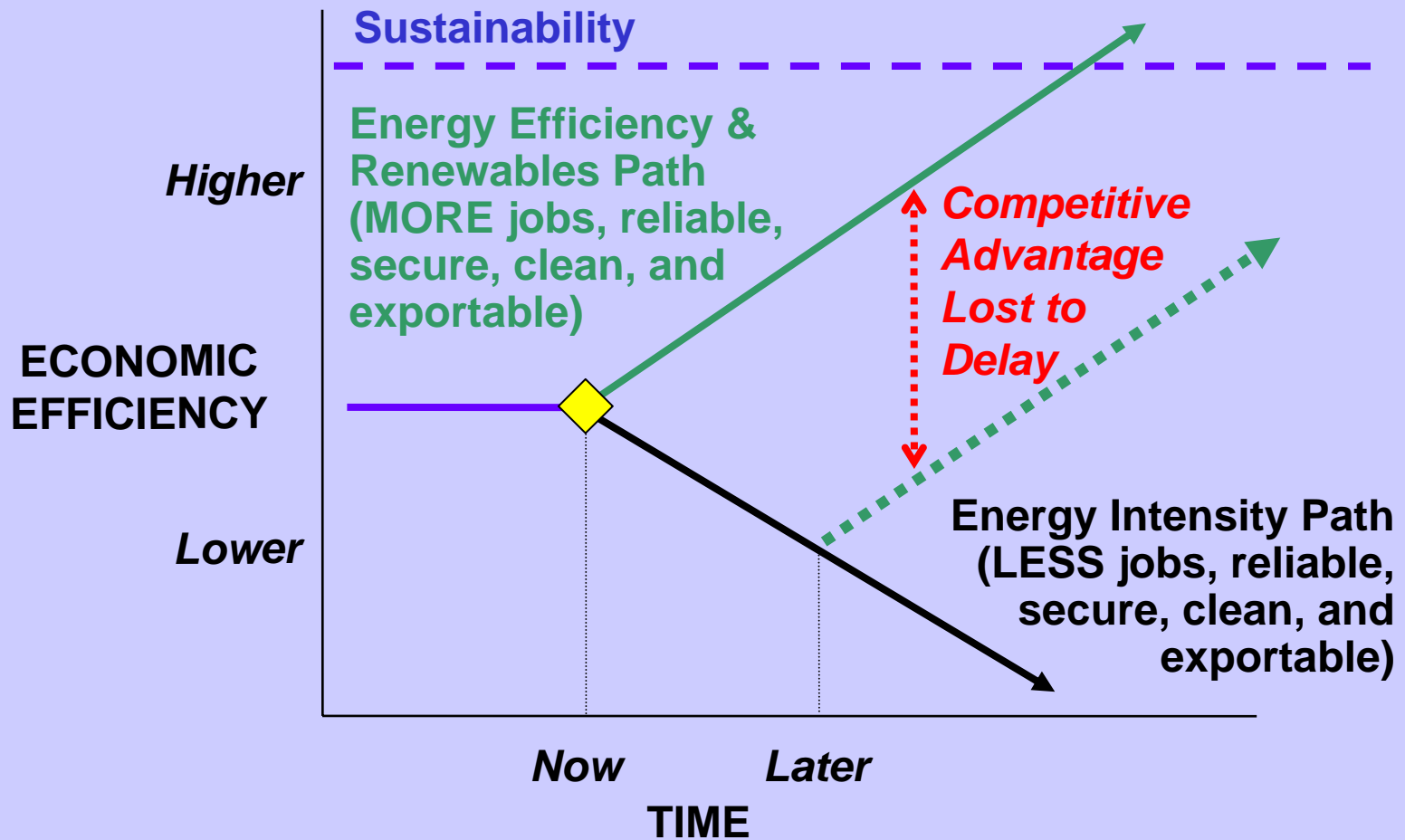
17% of CO₂ emissions

29% of population

31% of Business Tax Base

38% of GDP

Old or New Energy Path?



What Difference Does it Make?

States Have Significant Relative Impact...

- 1997 GHG Emissions:
 - **NESCAUM States** > Canada, Korea, Italy, Mexico, Australia, Brazil, France, or Spain
 - **New York** > Taiwan or Venezuela
 - **New England** > Netherlands or Argentina
 - **New Jersey** > Egypt, Belgium, or Algeria
 - **Massachusetts** > Greece, Austria, Denmark, Kuwait, Norway, Sweden, Israel, or Portugal
 - **Connecticut** > Switzerland, Ireland, New Zealand, or Peru
 - **Maine** > Croatia, Estonia, or Tunisia
 - **New Hampshire** > Lithuania, Jordan, or Ivory Coast
 - **Rhode Island** > Bolivia, Jamaica, Panama, or Kenya
 - **Vermont** > Paraguay, Tanzania, Iceland, or Cyprus

... Which Adds Up Rapidly

Top Emitters of CO₂ (1998 Mtons C):

1	UNITED STATES OF AMERICA	1486
2	CHINA (MAINLAND)	850
3	RUSSIAN FEDERATION	390
4	JAPAN	310
5	INDIA	290
6	NORTHEAST STATES + CALIFORNIA	230
7	GERMANY	225
8	UNITED KINGDOM	150
9	NORTHEAST STATES	130
10	CANADA	125

Source: G. Marland et al., Oakridge National Lab, 1998; EIA, 1999

Prior “Lead by Example” Success

- State Acid Rain laws: 1985
 - **Federal Acid Rain provisions:** 1990
- State laws for Toxic Air Contaminants: 1987
 - **Federal Toxics Program:** 1990
- State “4-P” laws for power plants: 2001-2
 - **Federal “4-P” law:** (Introduced)
- Statewide GHG reduction law: 2003
 - **Federal GHG law:** (Introduced)
- State/Regional GHG registries: 1999-2000
 - **Rigorous Federal Registry:** (Coming?)
- State GHG reductions from vehicles: 2002
 - **Federal vehicle GHG law:** ?

State Climate Actions Proliferating (1)

- **Oregon**
 - 1997 first law requiring new power plants to offset CO₂ emissions
- **Massachusetts**
 - 2001 first “4-P” regulations; include 10% CO₂ cut below 1997-99 baseline
- **New Hampshire**
 - 1999 first GHG registry law
 - 2002 first “4-P” law; cuts CO₂ to 1990 levels by 2010

State Climate Actions Proliferating (2)

- **California**
 - 2001 first functioning GHG registry
 - 2002 law requiring “maximum feasible and cost effective” CO₂ reductions from passenger cars and trucks
- **Maine**
 - 2003 first law requiring economy-wide reduction in GHG emissions to 1990 level by 2010
 - 2003 GHG emission reporting requirement

State Climate Actions Proliferating (3)

- **New Jersey**
 - 1999 Voluntary “pro-rata” Kyoto cuts (3.5% by 2005)
 - 2002 Utility settlement includes CO₂ cuts
 - 2003 GHG emission reporting requirement
- **Wisconsin**
 - 2002 registry law
- **Connecticut**
 - 2003 climate “Roadmap”

State Climate Actions Proliferating (4)

- **Renewable Power Mandates** (not all)
 - Maine: 30% by 2000
 - California: 20% by 2017
 - Nevada: 15% by 2013
 - Connecticut: 13% by 2009
 - New Mexico: 10% by 2011
 - New Jersey: 6.5% by 2012
 - Minnesota: 4.8% by 2012
 - Massachusetts: 4% by 2009
 - Texas: 2.2% by 2009
 - Wisconsin: 2.2% by 2011

**States Are Also Acting
Regionally...**

New England Governors and Eastern Canadian Premiers Regional Climate Commitment, 2001

- **Short-Term:**
 - Reduce GHG economy-wide to **1990 levels by 2010**
- **Mid-Term:**
 - Reduce by at least **10% below 1990 levels by 2020**
 - Establish an iterative “five-year process, starting in 2005, to adjust the goals if necessary, and set future emissions reduction goals”
- **Long-Term:**
 - Reduce “sufficiently to eliminate any dangerous threat to the climate “
 - Expected to be **“75-85% below current levels”**

NEG-ECP: Action Steps (1)

- *Action Item 1:* Establish Standardized Regional GHG Emissions **Inventory**
- *Action Item 2:* Establish a **Plan** for Reducing GHG Emissions and Conserving Energy
- *Action Item 3:* Promote **Public Awareness**
- *Action Item 4:* Governments **Lead by Example**
 - Reduce Public Sector GHG by 25% by 2012
- *Action Item 5:* Reduce **Electricity Sector** GHG
 - Lower CO₂/MWH by 20% by 2025

NEG-ECP: Action Steps (2)

- *Action Item 6:* Reduce Total **Energy Demand** through Conservation
 - By 2025, increase energy saved by 20%
- *Action Item 7:* Reduce and/or **Adapt** to Negative Social, Economic, and Environmental Impacts of Climate Change
- *Action Item 8:* Reduce Growth in **Transportation** Sector GHG Emissions
- *Action Item 9:* Create Regional GHG Emissions **Registry** and Explore Regional **Trading**

West Coast Governors' Initiative

- **Announced:** September 2003
- **Includes:** CA, OR, & WA
- **Purpose:** Joint strategy to reduce global warming
- **Initial Components:**
 - Combined purchasing for fuel efficient fleets
 - Uniform appliance efficiency standards
 - Measuring & reporting GHG emissions
 - Reducing diesel generator use on ships

Regional Greenhouse Gas Initiative (RGGI) (1)

- **Initiated** – April 2003 invitation by New York Governor Pataki to 10 Northeast and Mid-Atlantic states
- **Purpose** – Discuss adopting a power sector GHG “Cap-and-Trade” system
- **Status** – 9 states “in”; 2 observing for now; 1 province observing
- **Workplan** – Developed, approved by state environment ministers

Regional Greenhouse Gas Initiative (RGGI) (2)

- **Start simple:** CO₂ & power sector, then expand to other gases, sectors, offsets
- **Will include:** Data gathering, expert briefings, technical analyses, cost & benefits assessment, stakeholder participation
- **Other states:** May join
- **Phase 1 Target:** Model rule April 2005

Northeast Regional Greenhouse Gas Registry

- Funded; development effort **commencing**
- **Goal**: Support states' current & future efforts
- Will seek **consistency** with:
 - Other state/regional registries
 - Recognized GHG Protocols
- **States, NESCAUM, WRI, California Registry**
 - **Stakeholder** process to follow
- Focus on **power sector** (RGGI), then others
- Target start: **Mid-to-Late 2005**

Regional Climate and Economic Modeling Framework (1)

- Regional climate modeling less accurate but “in land of blind, one-eyed man is king”
 - PRECIS
- What technology & penetration options to mitigate/adapt; at what cost?
 - NE-MARKAL
- What impacts & benefits do such costs have in the regional economy?
 - REMI (?)

Regional Climate and Economic Modeling Framework (2)

- Will allow political leadership to make more educated policy decisions
- Framework is not yet funded; seeking support

Litigation

- **1999** – NGOs petitioned EPA to regulate GHG from mobile sources
- **August 2003** – EPA denied having authority to regulate GHG emissions
- **October 2003** – 12 states, plus cities & NGOs, appealed EPA's denial
- **States include:** CA, CT, IL, ME, MA, NJ, NM, NY, OR, RI, VT, and WA

And “State Activities” Exclude...

- **Municipalities** – 140+ ICLEI cities; 155 Mayors’ letter to Congress
- **Scientists** – 1000 wrote to Senate
- **Businesses** – Many acting without mandate
- **Investors** – CERES; pension funds
- **Public** – Polling favors action 3-4:1
- **Movement in Congress**
 - S.139 vote (McCain-Lieberman)
 - S.843 (Carper-Chafee-Gregg-Alexander “4-P”)
- **Not just U.S. States** – Australia? Others?

***Thank you for your time
and attention!***

