

New Energy Policy in the United States

APEX Conference in Boston
October 11-13, 2009

Hung-po Chao

Disclaimer

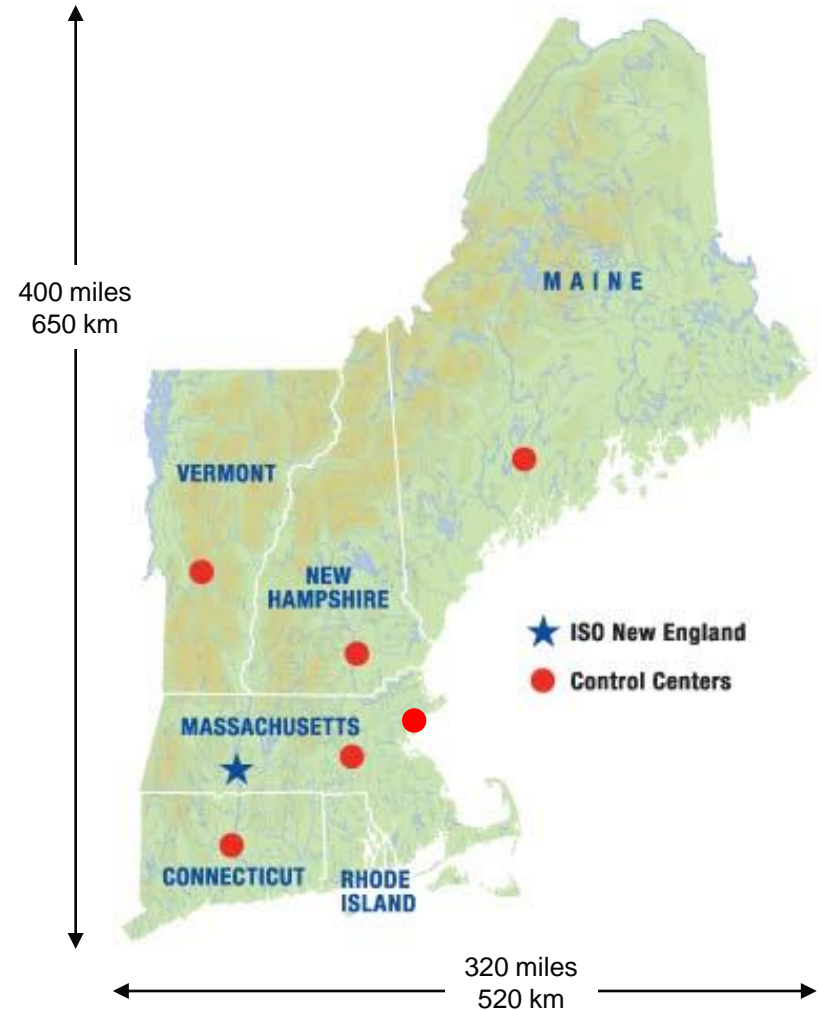
The opinions expressed in the presentation are solely my own and do not represent the positions of ISO New England or any other organizations.

Agenda

- Overview
- Selected Energy Trends from 1949 to 2008
- American Clean Energy and Security Act (ACESA) by Waxman and Markey
- Top Power Industry Issues

New England's Electric Power System

- 6.5 million households and businesses; population 14 million
- Over 350 generators
- Over 8,000 miles of high-voltage transmission lines
- 13 interconnections to electricity systems in New York and Canada
- More than 33,000 MW of total supply (including 1,900 MW of demand-response capacity)
- All time peak demand of 28,130 MW, set on August 2, 2006
- \$12 billion electric energy market (2008)
- More than 400 participants in the marketplace
- \$12 billion annual total energy market value (2008)
- More than \$4.0 billion in transmission improvements from 2002 through 2009 to enhance system reliability; more than \$4.6 billion planned over the next 10 years
- Six major 345-kilovolt projects constructed in four states



Key Drivers For Energy Supply Policy

- Economic Efficiency
- National Security
- Environmental Sustainability

Challenges for the New “Change” Agenda

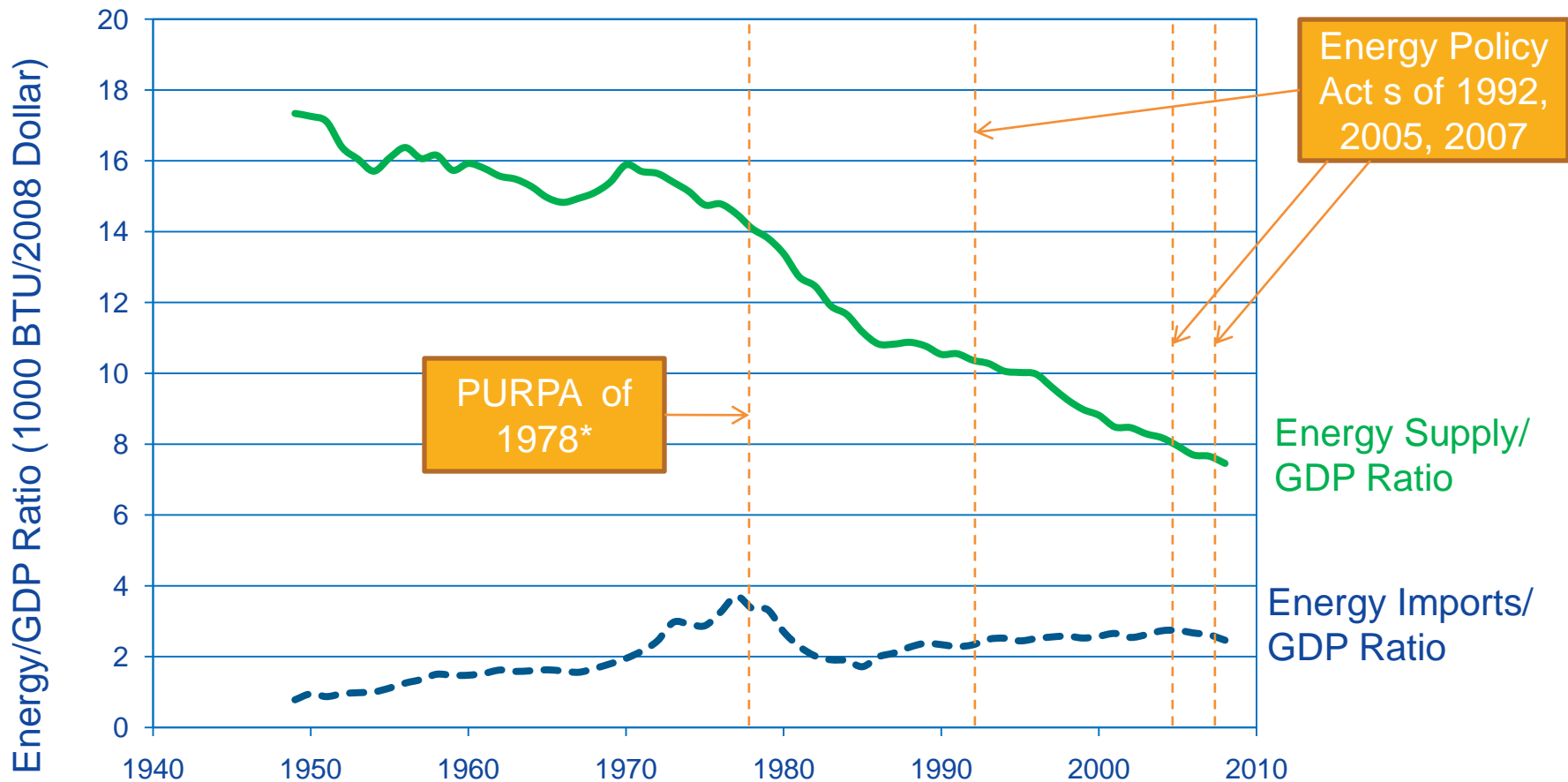
“There is nothing more difficult to take in hand, more perilous to conduct, or more uncertain in its outcome, than to take the lead in introducing a new order of things.”

Niccolo Machiavelli

“The difficulty lies not so much in developing new ideas as in escaping from old ones.”

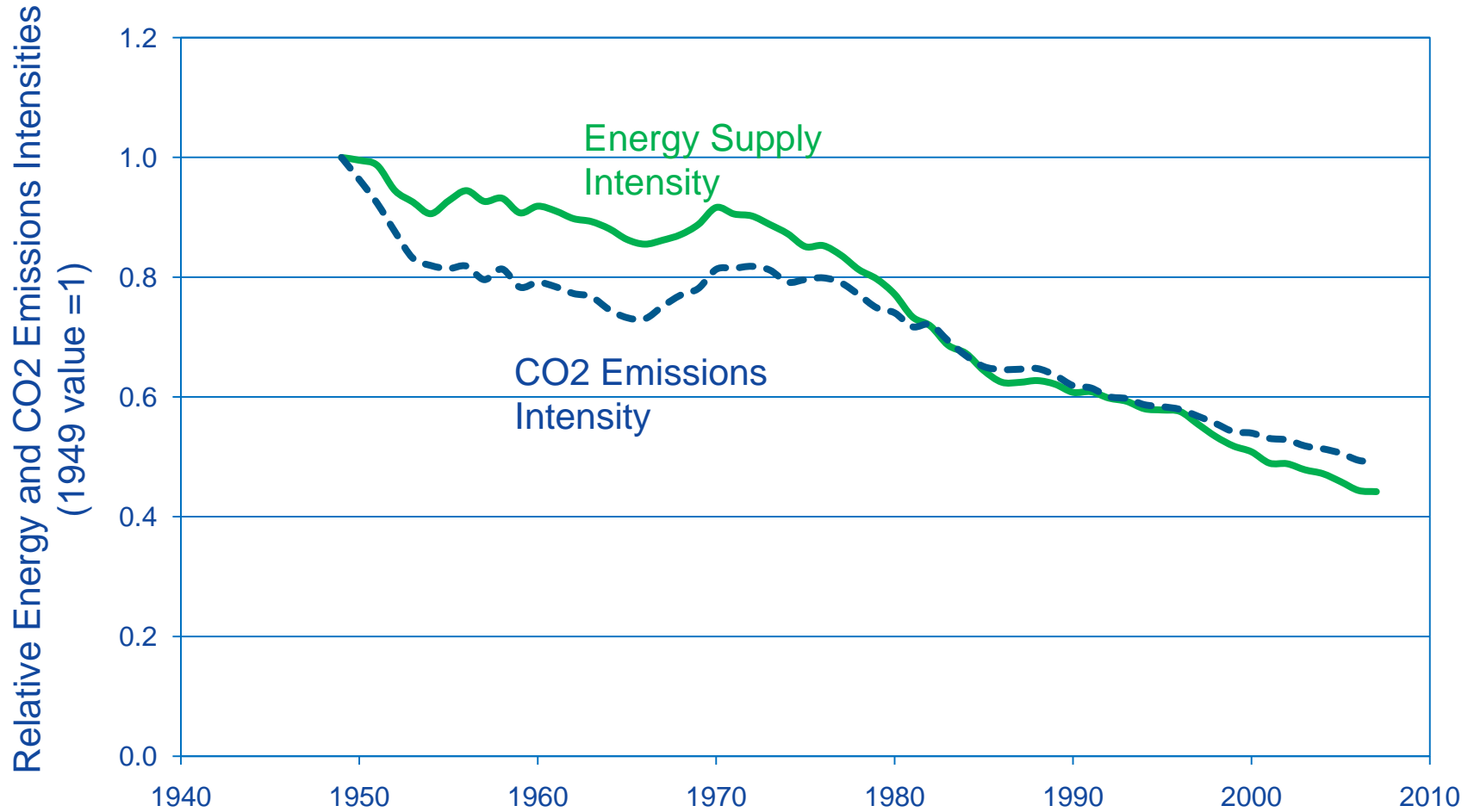
John Maynard Keynes

Energy Intensity in the United States from 1949 to 2008



*Public Utility Regulatory Policy Act (PURPA) in 1978

CO2 Emissions Intensity Tracks Energy Supply Intensity With a Declining Trend



The Role of Electricity Continues to Grow



The Waxman-Markey Bill of 2009

- I. Clean Energy
- II. Energy Efficiency
- III. Reducing Global Warming Pollution
- IV. Transitioning to a Clean Energy Economy

Clean Energy

- *Renewable and Efficiency Electricity Standard*
 - 20% of electricity from renewable sources by 2020
 - Up to 5 % of that amount may be met through energy savings
- *New Coal Plants and Carbon Capture and Storage (CCS)*
 - 2%-5% of the emissions allowances to be used to fund incentives for commercial deployment of CCS technology
 - *Coal-fired power plant standards.*
 - Units permitted during 2009-2020 must achieve a 50% CO₂ emission reduction by 2025.
 - Units permitted in 2020 or after must achieve a 65% CO₂ emission reduction upon startup.
- *State Energy and Environment Deployment ("SEED") Fund and Federal renewable energy purchases*
 - Financial assistance to states to advance policy goals
 - Federal agencies are authorized to sign 30 year contracts for purchase of renewable energy

Clean Energy

- *Clean Transportation*
 - Incentives and standards to *encourage clean vehicles and fuels*
 - Plug-in electric vehicle deployment
- *Smart Grid and Electricity Transmission*
 - Encourages deployment of a smart grid
 - Enable home appliances to interact with the smart grid
 - Empower FERC to reform regional planning
 - Modernize the electric grid
 - New transmission lines to carry electricity generated from renewable sources
 - Transmission investment must take into account both demand and supply options
- *Establish Eight Clean Energy Innovation Centers*

Energy Efficiency

- *Building energy efficiency*
 - 30% improvement in energy codes for new commercial buildings (ASHRAE) and homes (IECC)
 - 50% improvement after 2016
- *Lighting and appliances*
 - Set efficiency standards and incentives for lighting and appliances
- *Transportation efficiency*
 - Invest in public transportation
- *Industrial energy efficiency*
 - Awards innovative energy recovery methods, such as efficient motors, combined heat and power, and process engineering
- *Low Income Community Energy Efficiency*
 - Fund energy efficiency and clean energy projects in low-income rural and urban communities

Reducing Global Warming Pollution

Year	Emission Reduction Targets for Specified Sources Under Waxman-Markey Bill in the House (% below 2005 Levels)	Emission Reduction Targets Under Boxer-Kerry Climate Change Bill in the Senate (% below 2005 Levels)
2012	3%	3%
2020	17%	20%
2030	42%	42%
2050	83%	83%

Reducing Global Warming Pollution

- *Cost control*
 - Emissions trading and banking
 - Proven tools for lowering costs - developed in the acid rain and other programs
 - Emissions offsets
 - Reductions achieved from domestic and foreign sources outside the cap allowed in amounts of up to two billion tons per year
- *Strategic reserve*
 - A pool of emissions allowances is established to address the potential for carbon price spikes
- *Auction Reserve Price*
 - Initial minimum reserve price of \$10 dollars per ton
 - Increases 5% above inflation each year
- *Carbon market regulation*
 - FERC can fine up to \$25 million against market manipulation

Reducing Global Warming Pollution

- *Supplemental reductions.*
 - Reduce annual emissions by an amount equal to 10% of U.S. 2005 emission levels by 2020 through international agreements to slow tropical deforestation in other countries
- *Scientific review*
 - The National Academy of Sciences to review the targets periodically and recommend program changes to the President and Congress
- *State authority*
 - States have authority to establish more stringent clean energy, energy efficiency, and greenhouse gas control programs

Reducing Global Warming Pollution

- *Distribution of Allowances*
 - *Consumer and job protection.* The largest fraction of the allowances go for consumer protection (to LDCs) and to avoid shifting production – and the accompanying jobs and emissions – overseas in certain trade-sensitive and energy-intensive manufacturing industries
 - *Energy efficiency, renewables, and domestic adaptation.* Other major slices of allowances go to states for money-saving energy efficiency and renewable programs.
 - *International objectives.* A portion of the allowances are made available for international objectives, including reducing deforestation, helping most vulnerable countries adapt to climate change impacts, and promoting clean technology exports.

Transitioning to a Clean Energy Economy

- *Low-Income Consumer Assistance*
 - 15% of the allowance auction revenue to low-income families
- *Preserving domestic competitiveness and green jobs*
 - Transitional rebates to energy-intensive manufacturing facilities to counter pressures to shift production, jobs, and emissions overseas
 - Program for worker training and education for transition to the new energy economy
- *Domestic and international adaptation*
 - Provide funding to assist communities and the vulnerable developing countries with adapting to climate change
 - Provide funding to assist deployment of clean technologies in vulnerable developing countries

General Assessments

- The chance for the Congress to pass a climate bill in 2009 does not seem very likely
- The allocation of emission allowance to local distribution companies could compromise the efficiency of cap-and-trade
- The emission targets are effectively lower as a result of economic recession and emissions offsets
- Investments risks for fossil generation are generally increased

Technology, Policy and Market

- Top power industry issues and key role of technology
 - Infrastructure investments
 - Transmission
 - Generation
 - Plug-in hybrid electric vehicles
 - Demand response and advanced metering infrastructure
 - Renewable resources and green power
 - Wholesale and retail market developments
 - Climate change policy
- Technology is essential but not a substitute for smart policy and market rules