

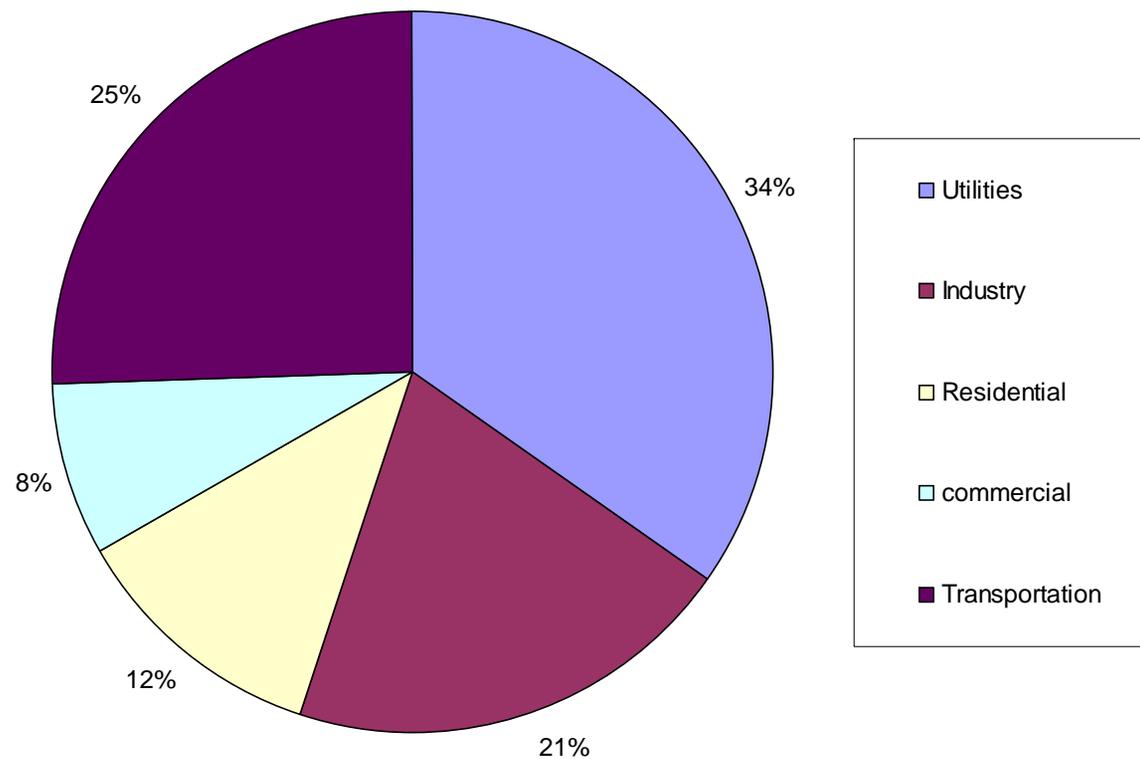
CO₂ and Delaware Power Plants

SCR 28 Workgroup

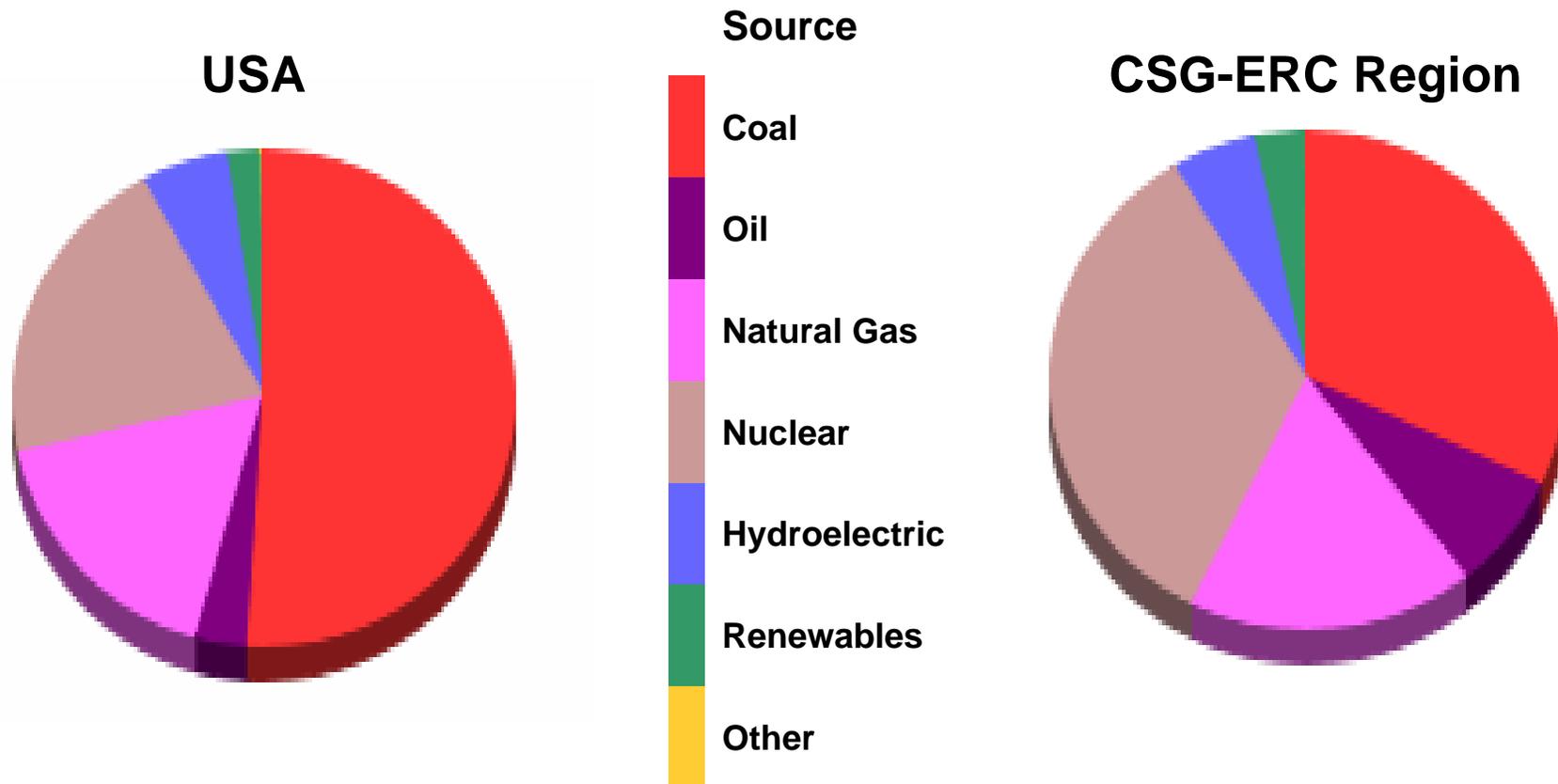
October 2, 2007

Relative contributions of CO2 emissions in Delaware for 1990

Source: 2000 Delaware Climate Change Action plan



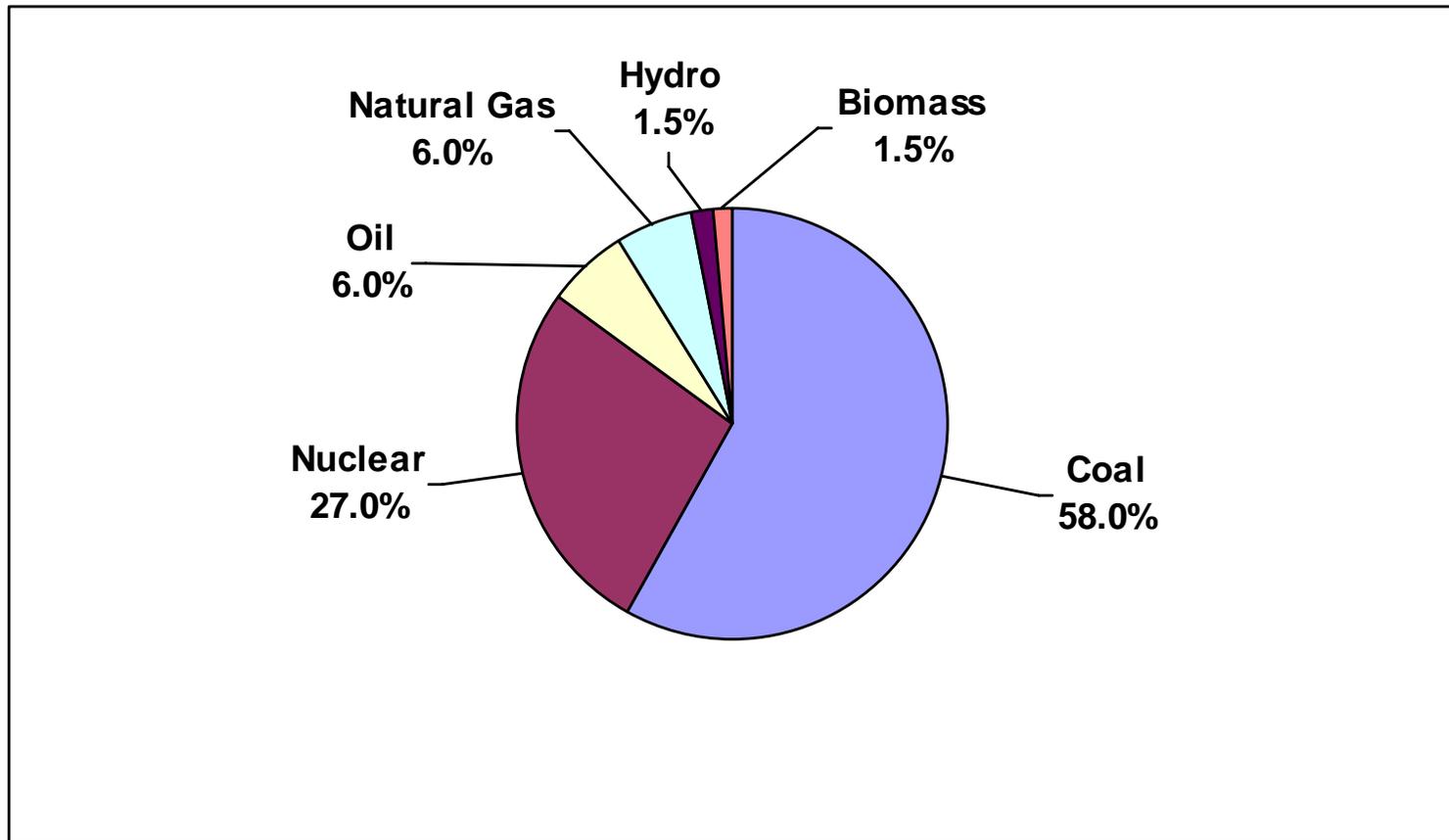
Sources for Electricity: USA and Northeast



Source: Climate Analysis Indicators Tools, WRI

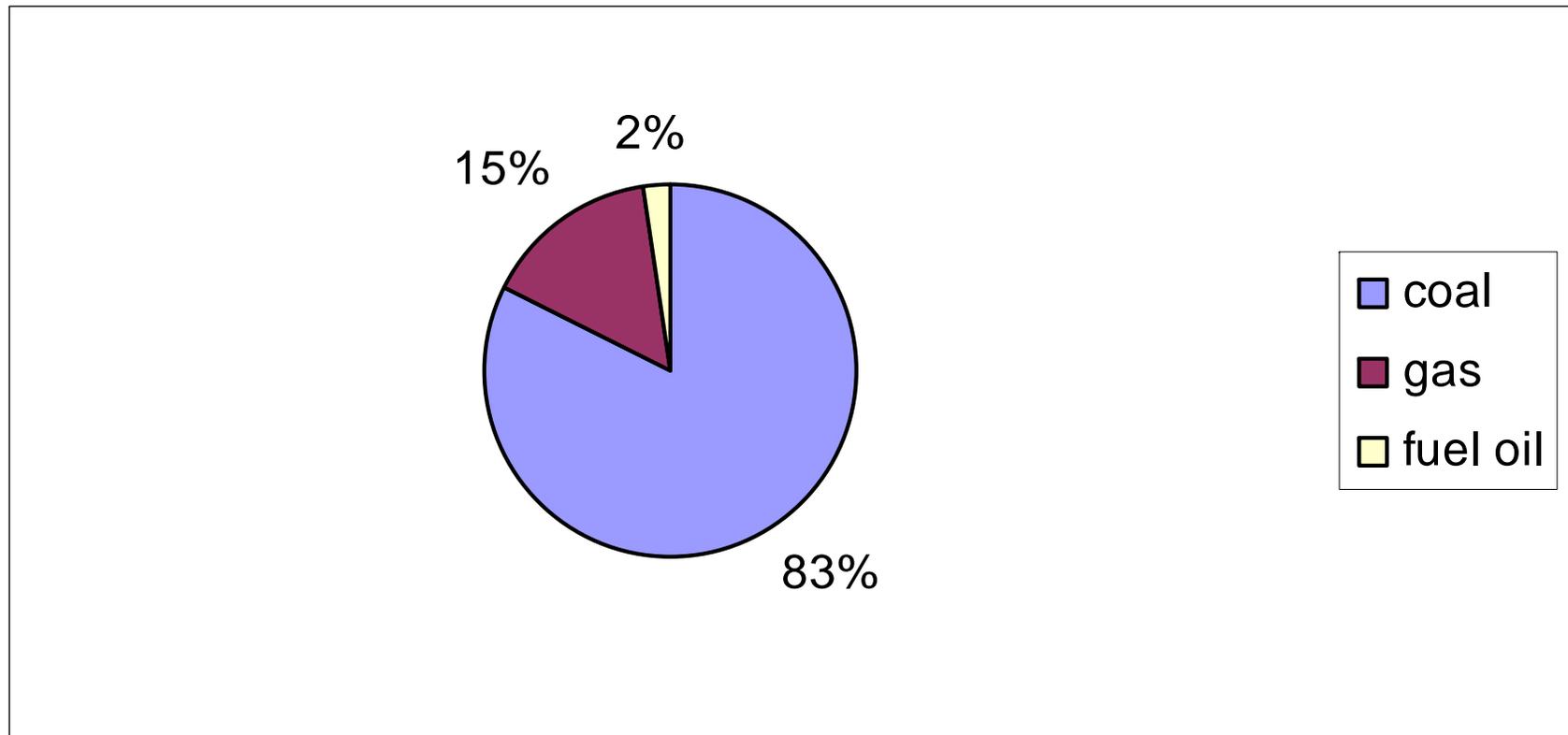
Fuels Used to Generate Electricity Consumed in Delaware

Source: DP&L/PJM



CO2 Emissions From Power Plants in Delaware By Fuel Type*

* 25 MW and greater, 2002 DNREC data

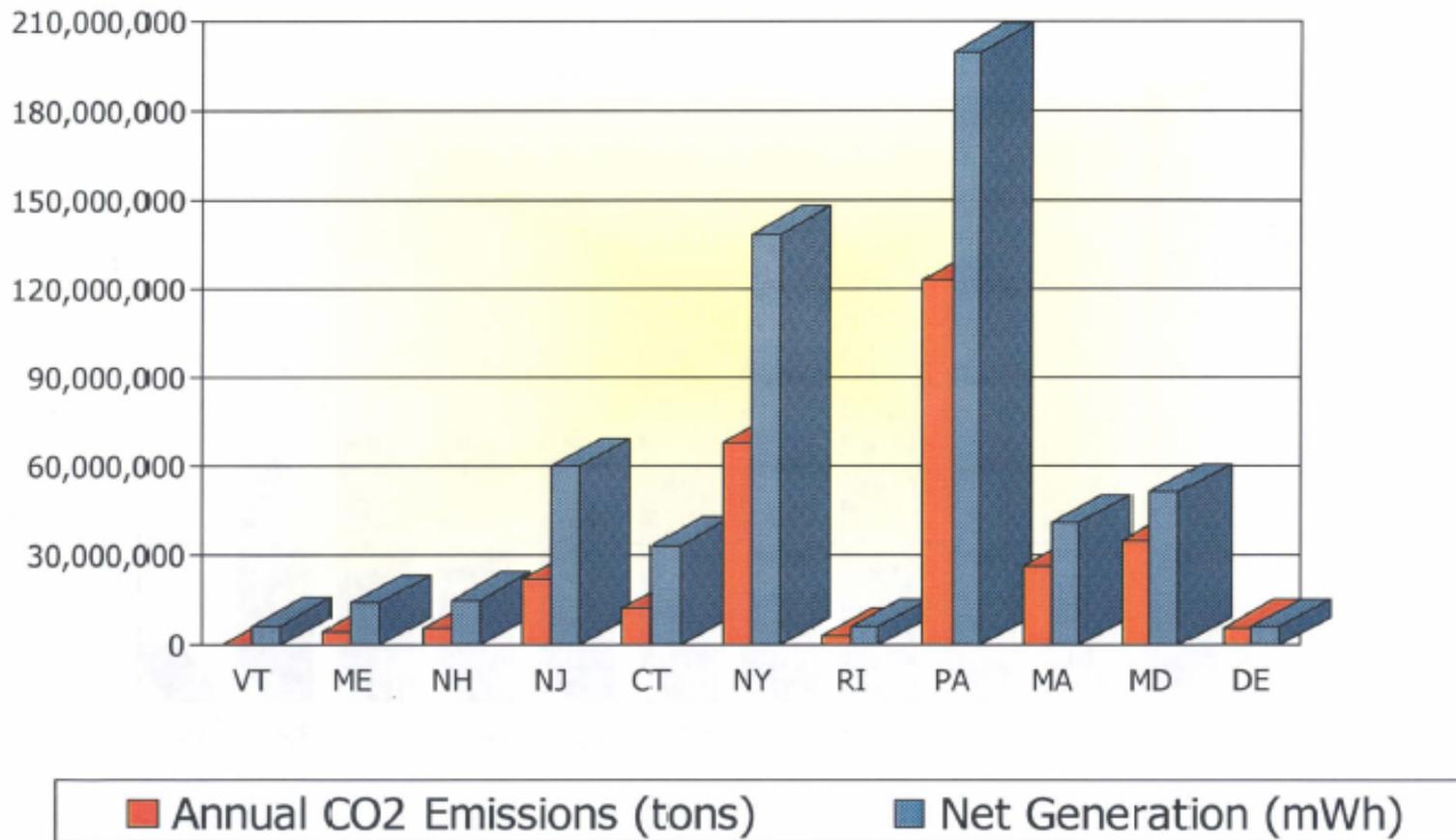


Delaware's Power Plants*

Facility (units)	Unit types	Generation (MGW)	Year	Fuel type
NRG Indian River (4)	Steam Turbines	82, 82, 177, 442	1957, 1959, 1970, 1980	Coal
Conectiv Edge Moor (3)	Steam Turbines	75, 177, 446	1954, 1966, 1973	Coal (446 Residual Oil)
Conectiv Hay Road (8)	6 CC (2 Waste Heat)	658, (220)	1989, 1990, & 2001	Pipeline Natural Gas/waste heat
Dover - McKee Run (1)	Steam Turbine	113.6	1975	Residual Oil
Dover - Van Sant (1)	CT	45.1	1991	Diesel Oil
DEMEC - Smyrna (1)	CT	45	2002	Natural Gas
NRG Dover (2)	CT	100.00	2001	Natural Gas
Motiva Refinery (6)	Steam Turbines (2CT's)	299	1956, 1961, 2000	Residual Oil (other gas)

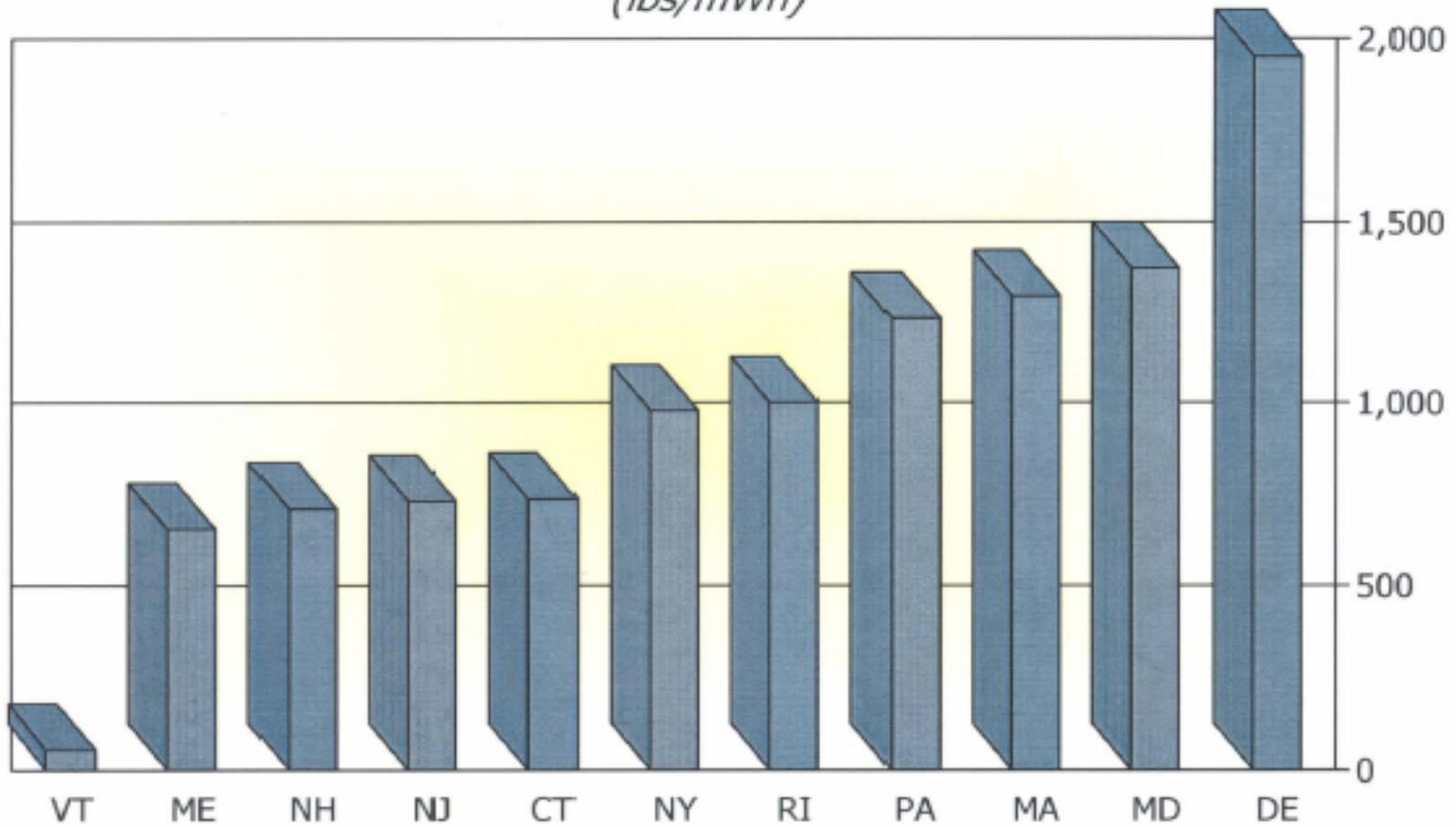
* Units over 25 MGW

Year 2000 Generation and Emissions



CO2 Output Emission Rate

(lbs/mWh)



RGGI History and Program Design



Regional Greenhouse Gas Initiative

An Initiative of the Northeast & Mid-Atlantic States of the U.S.

History

- April 2003 - New York Governor George Pataki sent letters to the 11 governors from Maine to Maryland, inviting states' to develop a regional CO₂ cap-and-trade program
- July 2003 - positive responses from nine – PA and MD chose to “observe”
- August 2003 - RGGI Staff Working Group formed with staff representatives from nine participating states' environmental and energy agencies (other states and ECP observing)
- September 2003 - Action Plan was endorsed by environmental and energy agency heads, laying out 18 month work plan



Regional Greenhouse Gas Initiative

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Statistics

- 3rd Largest World Economy
- 14% of US GHG Emissions
- 3.2% of World GHG Emissions (\cong Germany)





Regional Greenhouse Gas Initiative
An Initiative of the Northeast & Mid-Atlantic States of the U.S.

Context: Early Movers

- Northeast has history of Regional Cooperation on Air Quality – eg. Ozone Transport Commission
- New England Governors/ E. Canadian Premiers Plan (2001)
- State Climate Plans in all RGGI states
- Mandated GHG reductions in CT, MA, ME, RI, NH and others



Regional Greenhouse Gas Initiative

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RGGI Design Principles

- Reduce CO₂ with flexible, market-based program to achieve least cost reductions.
- Create model for federal program.
- Maintain electricity affordability, reliability and fuel diversity.
- Make expandable to other states.
- Build on programs in place.



Essential Components

- Adoption of the final rule in each state
- Environmental integrity
- Enforceability
- Simplicity of design: Inspire others to follow
- Promote reciprocity – easily integrated into national or global efforts



Regional Greenhouse Gas Initiative
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RGGI Progress to Date

- Over four years in development
- Extensive Stakeholder Process
- Expert Resource Panel
- State of the art Modeling – ICF/IPM
- MOU signed by 7 Governors 12/05
- Model Rule completed 8/06
- MD joins – 4/07
- RGGI Inc. formed 8/07



Regional Greenhouse Gas Initiative
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Stakeholder Group

- Stakeholder Group Composition: 24 organizations/companies
 - Electric generators
 - Electricity distribution companies
 - Energy efficiency & renewable energy interests
 - Energy users
 - Consumer interest organizations
 - Environmental organizations

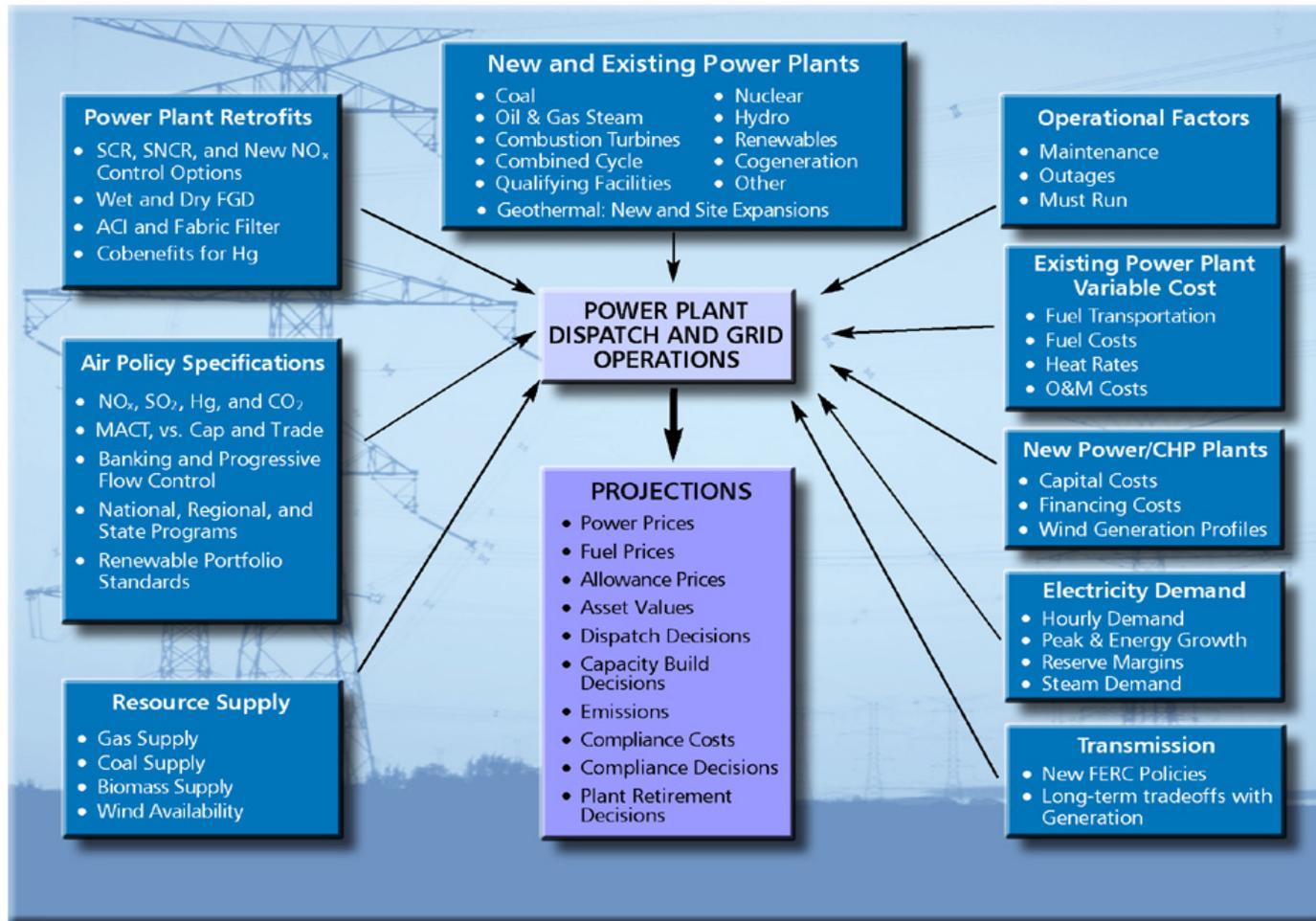


Resource Panel

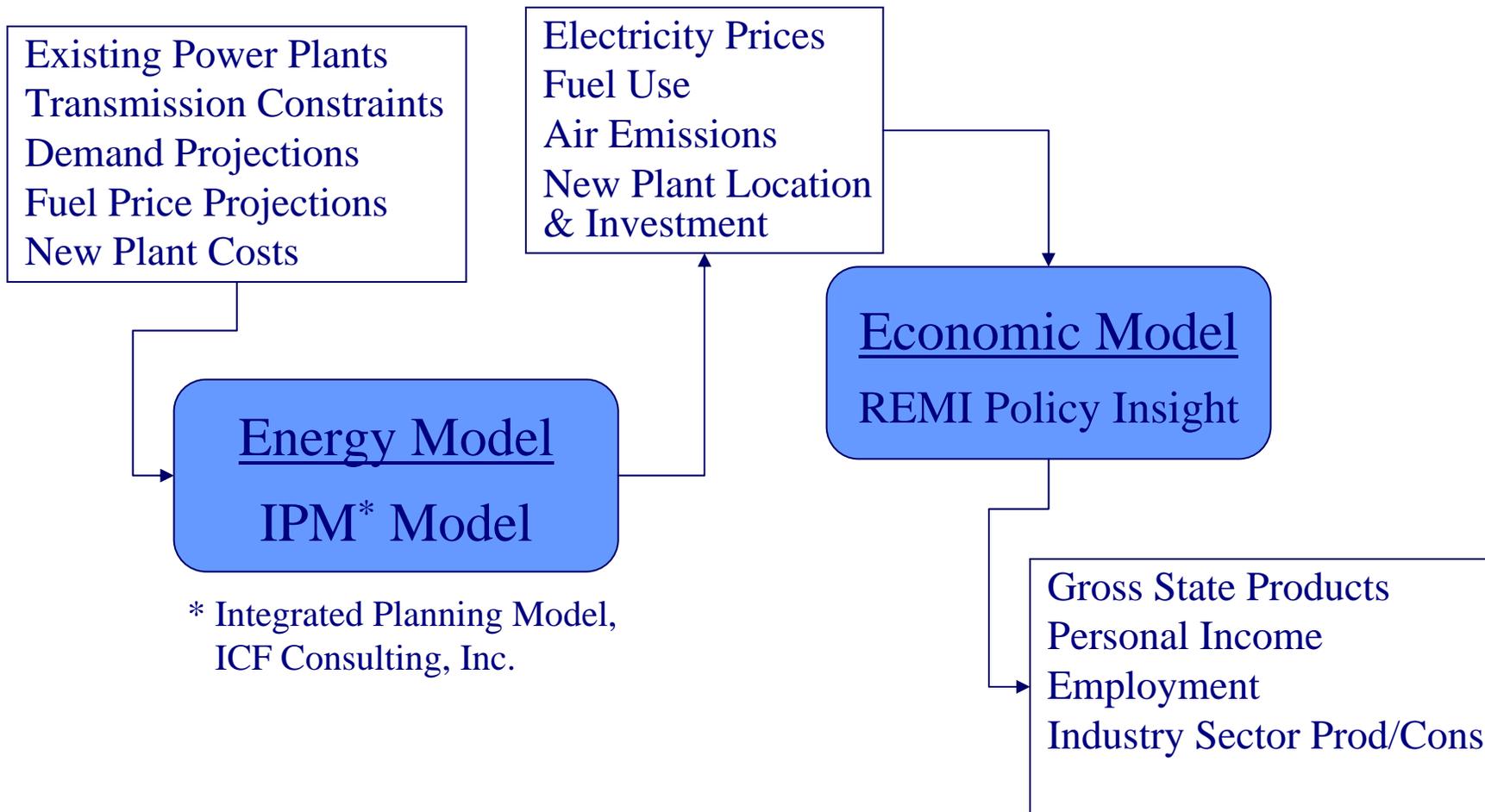
- Electricity Markets and Delivery: New England, New York, PJM ISOs
- Research Organization: WRI, Pew, RFF
- Emissions Trading: Natsource
- Energy: Regulatory Assistance Project
- Air Quality: NESCAUM

IPM[®] Analytic Framework

IPM[®] Modeling Structure



Integration of Energy and Economic Modeling



MOU Program Components

- Start Date of 2009
- Covers Power Plants 25 Megawatts+
- Two-Phase Cap—Stabilize Emissions through 2015; Reduce 10% by 2019.
- 150.5 MMt cap total for all 9 states
- State allocations specified in MOU
- Offsets allowed to provide some flexibility
- Price trigger safety valves to control costs through expanded offsets and extended compliance periods

RGGI State Allocations*

Connecticut:	10,695,036 tons
Delaware:	7,559,787
Maine:	5,948,902
Maryland:	37,503,983
Massachusetts:	26,660,204
New Hampshire:	8,620,460
New Jersey:	22,892,730
New York:	64,310,805
Rhode Island:	2,659,239
Vermont:	<u>1,225,830</u>
	188,076,976 tons

*Based on adjusted actual annual average emissions from all affected facilities
2000-2002

MOU Program Components

- Allowance Allocations:
 - States make allowances available to market via
 - **Auction of allowances**
 - **Direct allocation to generators**
 - 25% required for Consumer Benefit under MOU
 - Remaining 75% of the allowances left to each state to allocate
- 3-Year Compliance Periods
- Banking Allowed
- Early Reduction credits allowed
- Comprehensive Review of Program in 2012

MOU Program Components

- Offsets—project-based reductions outside the electric generating sector
 - Types:
 - Natural Gas, Propane, Heating Oil Efficiency
 - Land to Forest
 - Landfill Gas Capture & Combustion
 - Methane Capture from Animal Operations
 - SF₆ Leak Prevention
 - Geographic Extent:
 - Anywhere in the United States providing host state has carbon program and agrees to trade
 - Limit on Use:
 - Each Source may “cover” up to 3.3% of its total reported emissions

MOU Program Components

- **Safety Valves**
 - \$7.00 Trigger
 - Limit on offset use increased from 3.3% to 5% of a source's reported emissions
 - \$10.00 trigger
 - Offset limit goes to 10%
 - Retirement of international credits allowed
 - Compliance period may be extended 1 year
 - No program suspension, alternative compliance payments or additional allowances

RGGI Economic Impacts

- Using natural gas price projections widely accepted by industry analysts, regional average retail price increases range from 0.3% to 0.6% in 2015, across all rate classes.
- Projected direct electricity bill impacts due to RGGI range from \$3 - \$16 per average household annually in 2015.
- Improvement in end-use energy efficiency over time, due to both RGGI and other state energy policies, is projected to produce average household bill *savings* that exceed the price impact of the RGGI program.

RGGI Outstanding Issues

- Allowance allocation - decided by states
 - “grandfathered”
 - Auctions
- Auction structure
 - Regional platform
 - Limited entry?
 - Periodicity and timing
- New Sources – state issue – dependent on allocation methodology
- Leakage - study out for comment. Extent of problem unknown, solutions not readily apparent

RGGI Next Steps

- Delaware Cap and Trade Regulation to be promulgated next year by DNREC Air Quality Management
- Legislation needed to auction allowances, set auction level and direct revenue
- Regional Emissions Allowance and Tracking system established in mid 2008
- Regional Auction Platform established by mid-2008 (NY, MA others to do initial auctions ASAP)
- Offsets support documents and protocols established 2008
- RGGI Inc. to establish office and staff in early 2008
- Continued coordination with other interested states

Questions?