Moving States Towards Multi-Pollutant Air Quality Planning

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Take-Away Message

- An integrated multi-pollutant planning approach, supported by a technical framework, can enable states to:
  - meet air quality objectives
  - reduce greenhouse gases
  - meet electricity demand through reliable and diverse supplies

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Traditional Air Planning Approach is Becoming Less Effective

- Climate Change has moved to center stage on the policy agenda
- Single pollutant programs can't solve all air quality problems, and can create or exacerbate other problems
- States have many competing needs –- economic, environmental, energy, security, etc.

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Multi-Pollutant Makes Sense

- Energy and air quality are linked -- programs that reduce greenhouse gases can also reduce PM and ozone precursors
- Can be a more cost-effective approach, using state resources effectively and efficiently
- Can identify potential tradeoffs and provide information for policy makers to make informed decisions
- Can result in equal and better environmental results overall

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NESCAUM's View of Multi-Pollutant Planning

- Addresses multiple pollutants -- at least SO_2, NO_X, Hg, CO_2 and PM
- Highlights tradeoffs
- Analyzes the economic and environmental implications of various planning options
- Allows for multi-sector analyses

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Need to Change Planning Paradigm

- Move to a broader, longer term multi-pollutant planning approach, from which the SIP can be developed
- SIP is no longer the sole driver, but one of several drivers and components
- Work with/align various state offices in a new planning exercise to identify common solutions

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Need to Modify Planning Horizons

- Air quality agenda requires multiple plans and regulations on relatively short-term planning cycles (typically three to nine years) .
- Energy and Climate programs work under longer term planning cycles
- Possible to plan for longer cycles while meeting shorter term goals

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NESCAUM's Goals

- Enable state multi-pollutant planning through replicable, consistent and predictable protocols
- Foster integrated environmental and energy planning by leading with energy
- Refine tools that can support integrated, multi-pollutant work, and can be applied on a national scale
- Ensure that results from this approach can be used in SIPs and by energy planners to develop their Integrated Resource Plans (IRPs)

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NESCAUM's Multi-Pollutant Policy Analysis Framework (MPAF)

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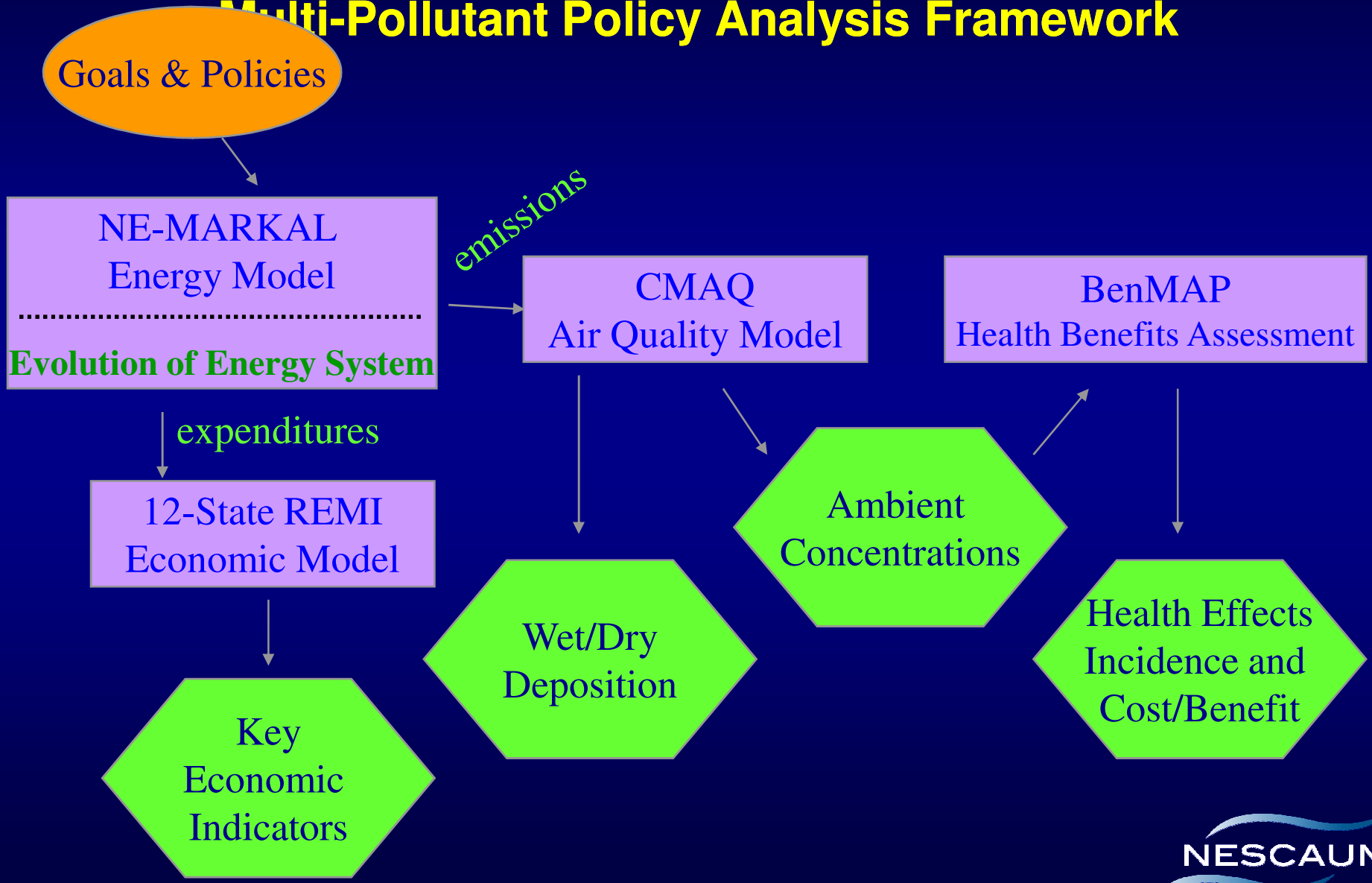
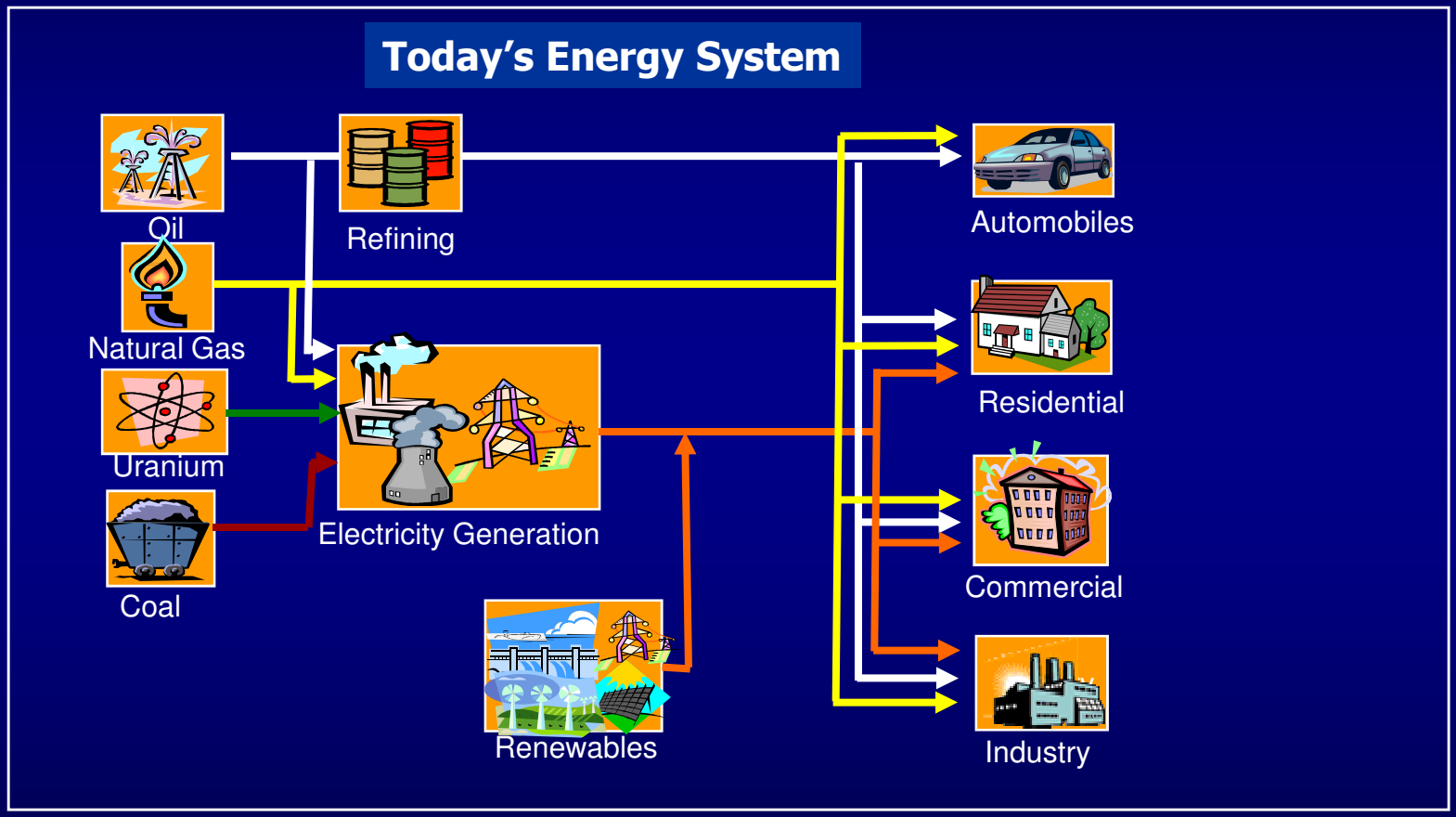
NESCAUM's Multi-Pollutant Policy Analysis Framework



NE-MARKAL: Energy Model as Centerpiece



Source: EPA ORD

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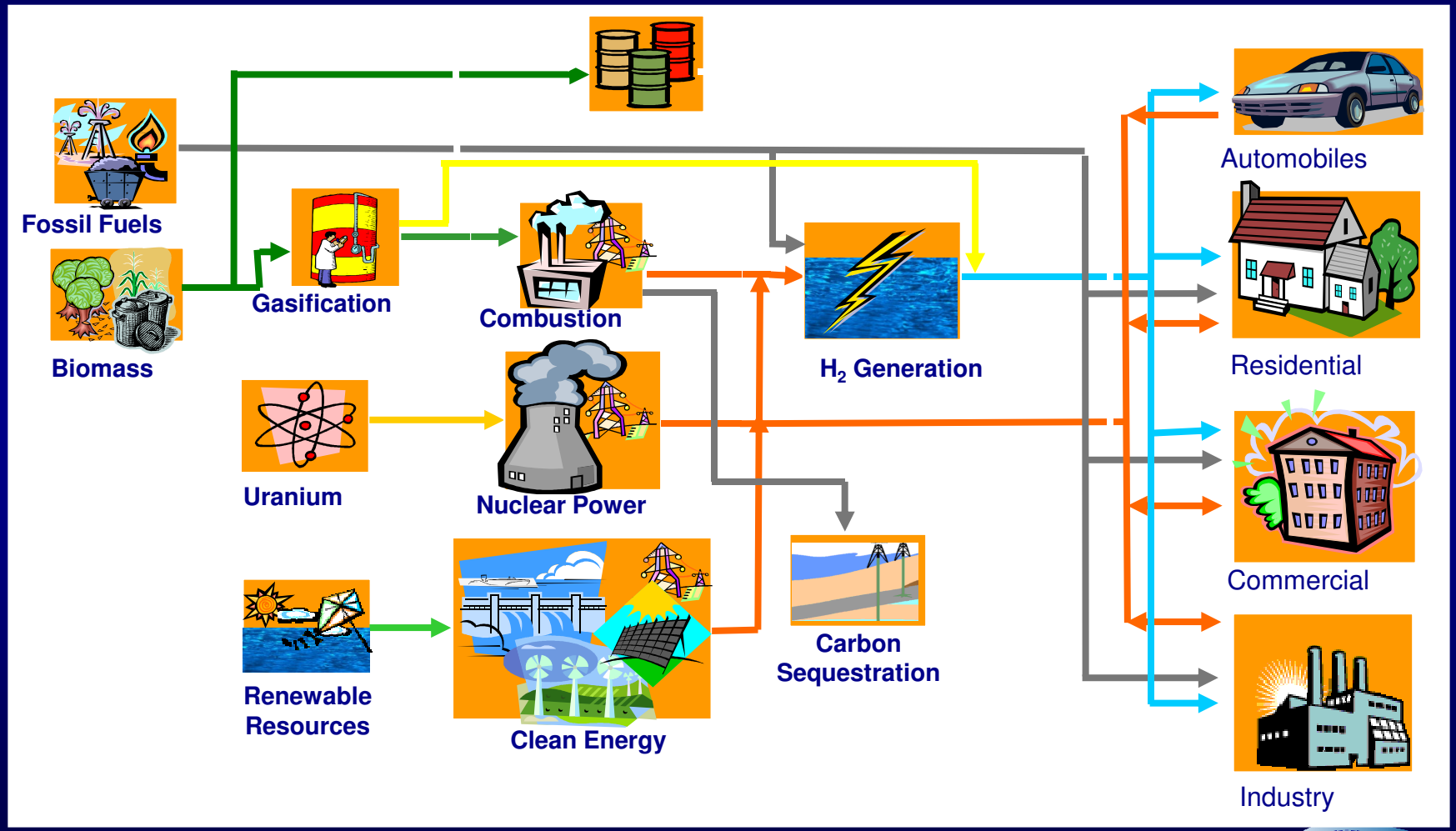

Source: EPA ORD

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General NE-MARKAL Configuration

- For the model to operate we provide it with a "snapshot" of all in-use energy consuming technologies in each of 5 sectors in 2002 and calibrate to actual energy use through 2005.
- The model's base year is 2002 and it solves in 3 year time periods.
- Beyond 2005, the model selects the least-cost optimized solution for meeting specified energy service demands in each sector for each time period through 2029.
- Constraints are imposed to smooth technology transition and reflect known policies (e.g., RPS)

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Examples of integrated energy-air quality analyses

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Sectoral Interactions and Advantages of Multi-pollutant Planning

- Transportation policies
  Sector specific comparative analysis

- Low Emission Vehicle Standard (LEV)
  Cross-sector implications

- Multi-pollutant policies
  Cross-sectoral comparative analysis

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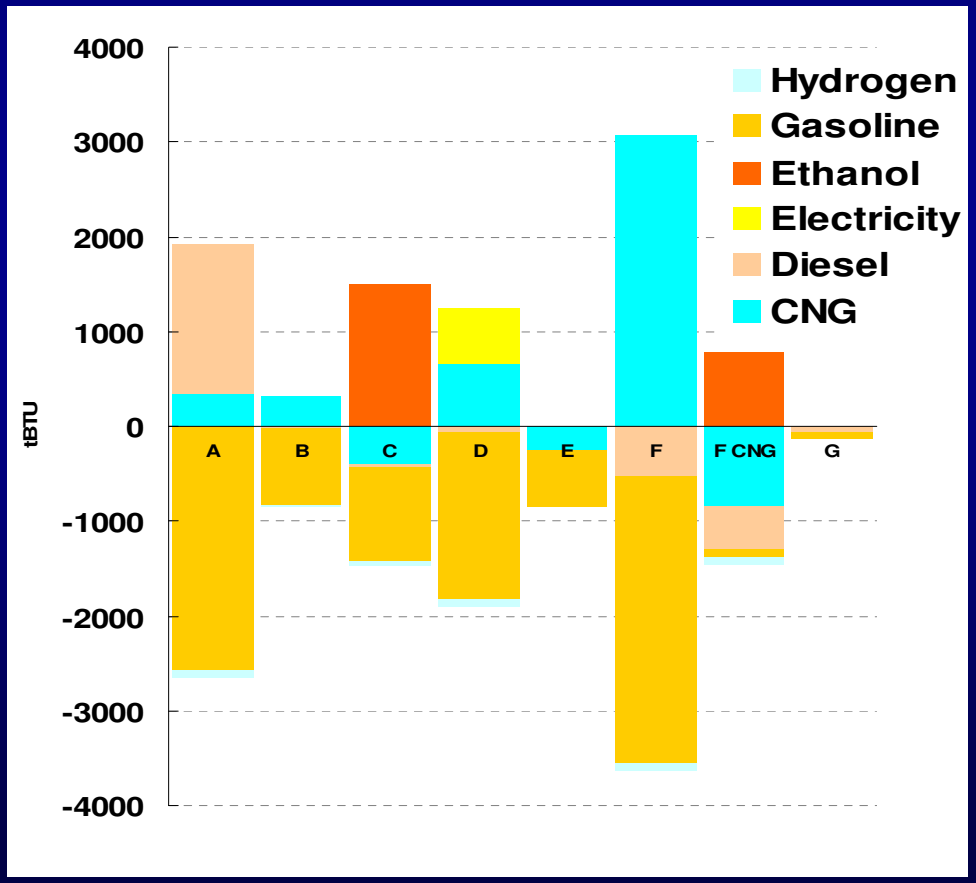
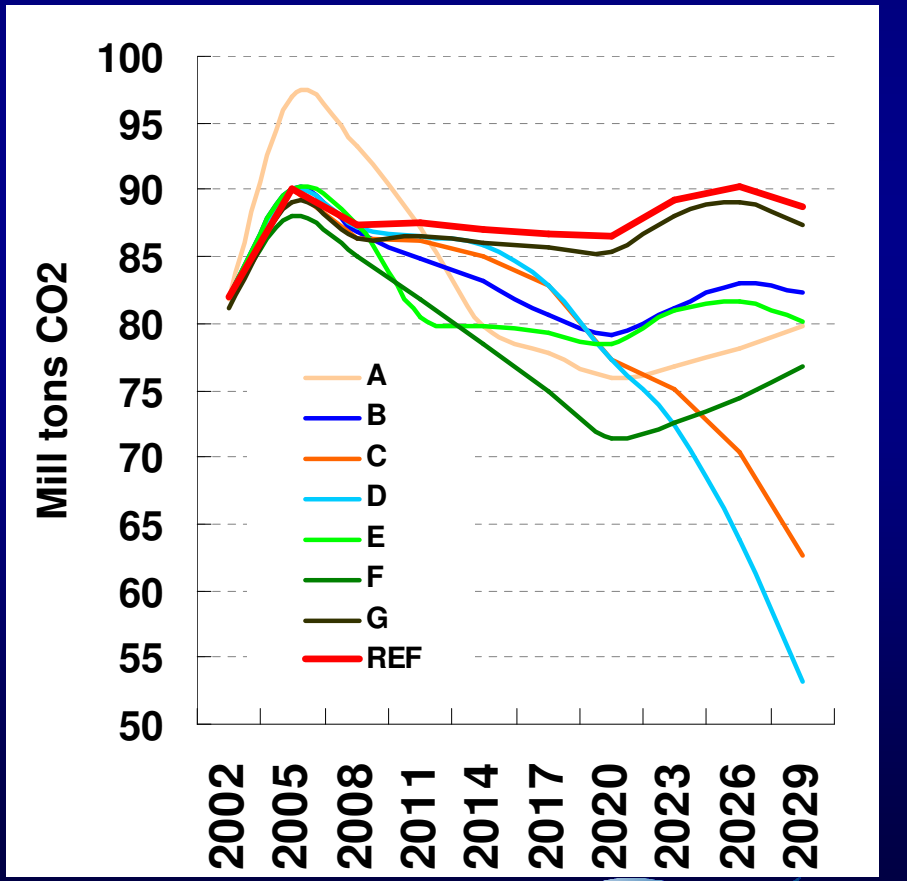
Example Transportation Policies

Fuel Consumption Changes



Emissions Changes

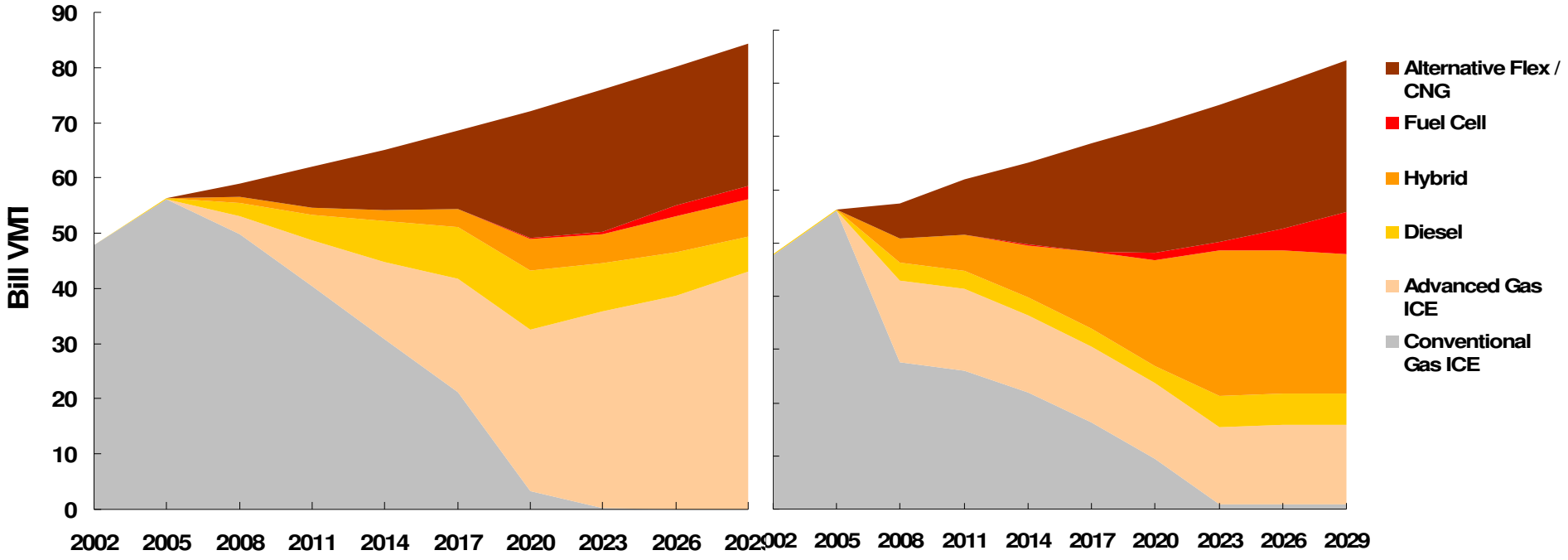


Low Emissions Vehicle Policy (1)

- Examines northeast adoption of the CA-LEV light duty vehicle standards.
- In the reference case gasoline remains the most intensively consumed fuel (Internal Combustion Engines-ICE) vs. plug-in hybrids with LEV.

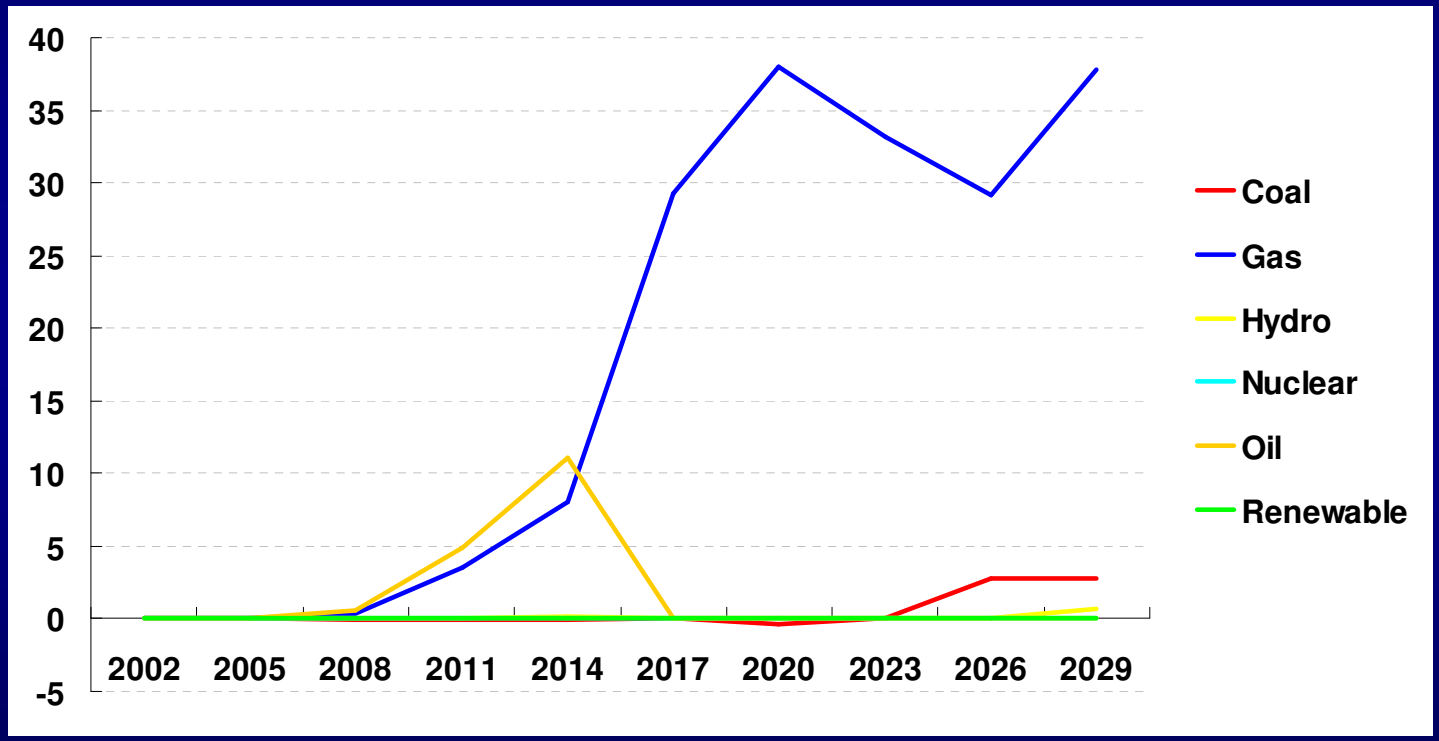
Reference

With Policy



Low Emissions Vehicle Policy (2)

- Increased demand for electricity is met primarily by gas units.



Increase in Power Sector: 55
Decrease in Transportation Sector: 113
Net Decrease in CO_2 emissions: 58
(million tons)

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Projected GHG & Criteria Pollutant Reductions

	2002-2014	*2002-2030*	*2002-2030*
	NOx (thous tons)		CO_2 (mill tons)
RGGI	-1	3	12
LEV	33	90	58
↓25% CO_2 *	107	279	208
CAIR	45	98	14

- Climate focused policies can help to meet short- and long-term criteria pollutant goals.
- Near-term criteria pollutant goals, however, play only a small role in achieving long term climate goals.
- The multi-pollutant approach provides the opportunity to simultaneously address criteria and climate pollutant goals more efficiently than a pollutant by pollutant approach.

*25% Economy-wide reduction from 1990 baseline by 2029.

Advantages and Caveats to MPAF Approach

- Relatively quick and inexpensive to use, transparent to review, and detailed enough to asses a wide range of climate, air quality and energy policies
- This is just one set of tools. While expansive in its coverage, it will not provide perfect representation of all sectors and technologies
- MPAF is used for comparative policy analysis. The system is NOT a forecast tool.

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How This is Different

- Broader planning horizons, bigger picture, multi-disciplinary
- It's only one piece of the multi-pollutant puzzle
- The planning happens first, results then feed into various plans (i.e., SIP, IRP)
- Outputs can be used to inform air, energy, and economic policy (and vice versa)
- An iterative process – the model must first be tailored to state-specific conditions before it can be used to inform decisions
- Requires policy-makers to look at tradeoffs

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NYSDEC's Multi-P Planning Approach

- Encompassed in the Air Quality Management Plan and addresses:
  - nonattainment and maintenance of NAAQS
  - sector-based emission control strategies
  - emission/risk reductions of HAPs
  - climate change
  - regional haze
  - visibility
- Also addresses land-use, transportation, energy and ecosystem health to the extent practicable.
- Incorporates NYSDEC priorities, provides details on the air quality planning goals and potential strategies by which these goals may be achieved, as well as the technical approaches that will be used

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NYSDEC
Working toward Multi-P Goals

- Intra-Departmental Coordination
  - Climate Change Office
  - Bureaus within Division of Air Resources
  - Division of Lands and Forests
- State Agency Coordination
  - Energy Research and Development Authority
  - Transportation
  - Health
- City / Local Government Coordination
  - City of New York

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Multi-P Challenges

- Clean Air Act presents some conflicting goals , i.e., stovepiping
  - Separate versus coordinating ozone/PM/toxics/deposition/visibility/ climate change
- Intra-agency coordination
- Cross-agency conflicts of interest
- Differences in regional priorities
- Politics
- Economics

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Expected Multi-P Advantages

- Improved technical planning
- Improved use of agency resources
- Improved decision making process/policy decisions
- Improved public communications
- Longer term vision and plan

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Take Away Messages

- Multi-pollutant planning makes sense. It has the potential to align various state offices in a new planning exercise and identify common solutions.
- Successful multi-pollutant identifies potential tradeoffs and provides information for policy makers to make informed decisions.
- SIP planning and requirements are just one driver/component of multi-pollutant planning.
- Tools are out there. NESCAUM's framework leads with energy and can help air regulators move toward multi-pollutant planning.

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THANK YOU!

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