Applying the Northeast Regional Multi-Pollutant Policy Analysis Framework to New York

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Presentation Outline

- Motivation for proposal and Multi-Pollutant planning in the Northeast

- Overview of project: objectives, scope, tasks, and deliverables

- Discussion of multi-pollutant framework: its application, advantages and limitations

Motivation for Multi-pollutant Planning

NYSERDA's Interest:
Improved Energy and Environmental Modeling, including Multi-pollutant Control Strategies

- Enhance representation of EGUs and associated emissions

- Improve links between models

- Improve representation of new generation technologies, renewables, energy-efficiency technologies, combined heat & power, and emission control technologies

- Model impacts of achieving proposed EE and renewables targets

- Model multi-pollutant strategies to evaluate program interactions and ability to meet environmental goals

NESCAUM's Planning Approach

- Traditional Approach
  - State-based data collection (disparate sources, similar methods) occurs first, then combined into regional emissions inventories for SIP modeling purposes
  - "Grown" inventories rely on IPM model (covering power sector only), historical trends, and growth factors
  - Difficult to change growth assumptions once locked into IPM and inventories
  - Analyzes one or two projection years; results in emissions and air quality changes as metrics

- NE-MARKAL Energy-Environment model Approach
  - Develop regional inventories based on national (DOE), state, and local databases; then state-specific refinement and vetting occurs
  - Modeled evolution of technology needed to satisfy demand and policy constraints; these growth assumptions provided by the model are vetted with states and can be easily modified to reflect state-specific conditions
  - Complete evolution over 30 year period with costs, technologies, and emissions

Project Overview

Project Goals:

- To identify a suite of strategies that will simultaneously be able to make significant progress toward ozone, PM, mercury, acid deposition, and climate goals

- To use NESCAUM's Multi-pollutant Policy Analysis Framework (MPAF) to develop a solid basis for these strategies from the perspectives of the economy, technological evolution, the environment, and other public health endpoints

Project Policy Objectives

- Build institutional capacity at NYSDEC to use MPAF
  - Identify policy challenges and capacity building needs, host workshop and document results

- Work with NYSDEC to identify & address cross-sector pollutant interactions and trade-offs
  - Iterative and coordinated process -- strategies must be identified, tailored and refined

- Serve as model for replication in broader NE
  - Assist with NYSERDA on outreach activities: work with PAC/present at EMEP, outreach to EPA, NACAA. OTC, MARAMA, and academic audiences, publish in peer-reviewed literature

NESCAUM

Tasks

- Identify environmental targets
- Identify key strategies
- Represent goals and strategies in model, and document reference scenario and assumptions
- Employ MPAF
- Final Report
- Technology Transfer
- Public Outreach

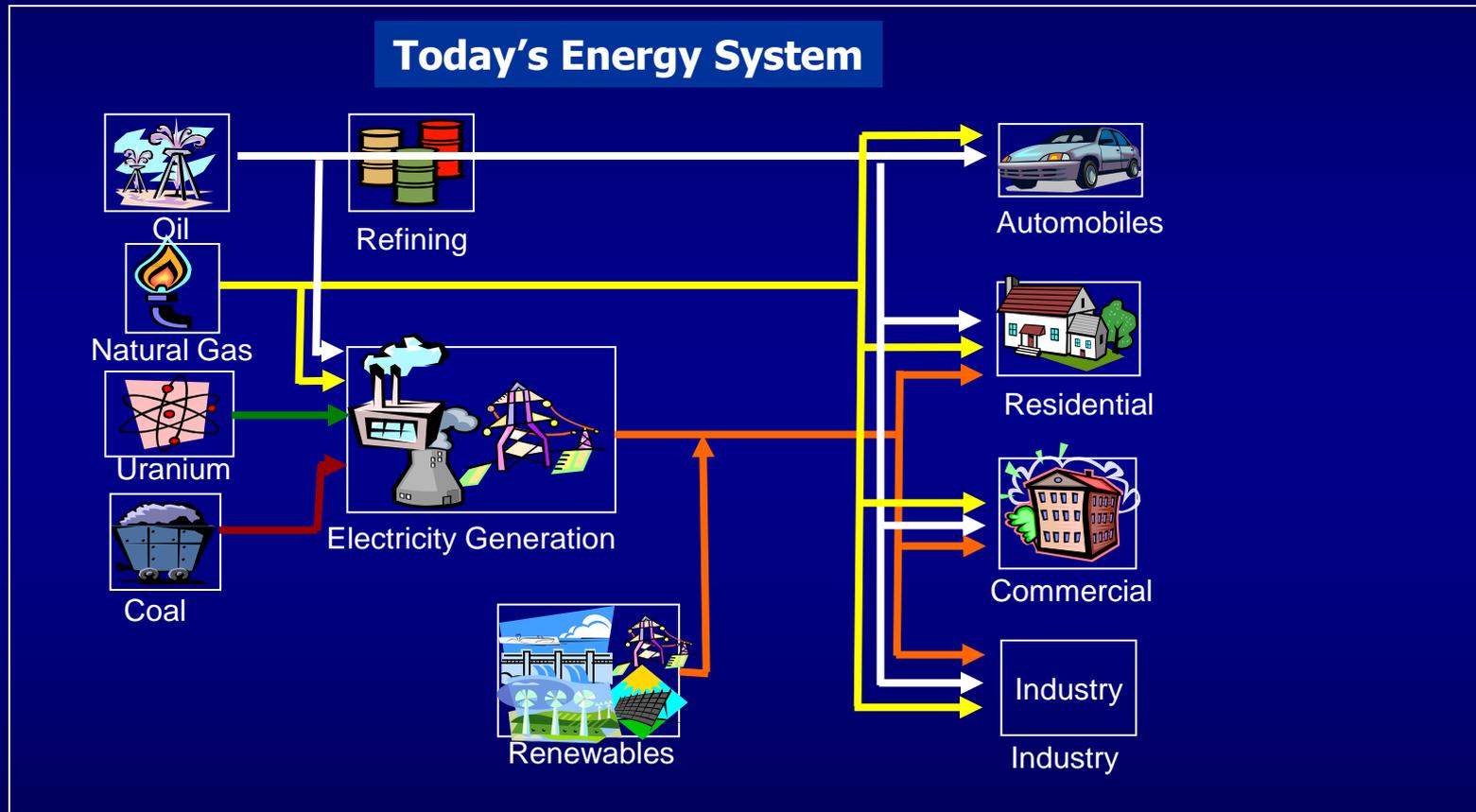# Environmental Goals

- Climate Change

- Attain All NAAQS

- Toxics

- Reduce critical load exceedences

- Improve visibility

Strategies

- Renewables (30% by 2015)
- Energy Efficiency
- Appliance Standards (Energy Star)
- Transportation
  - Increased efficiency in light/heavy duty vehicles
  - New fuels (ethanol, electricity)
- CHP and Industrial Sector Efficiency

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

NESCAUM's Multi-Pollutant Policy Analysis Framework

Goals & Policies

NE-MARKAL
Energy Model
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Evolution of Energy System

emissions

CMAQ
Air Quality Model

BenMAP
Health Benefits Assessment

expenditures

12-State REMI
Economic Model

Ambient
Concentrations

Wet/Dry
Deposition

Health Effects
Incidence and
Cost/Benefit

Key
Economic
Indicators

NE-MARKAL:
Energy Model as Centerpiece

Source: EPA ORD

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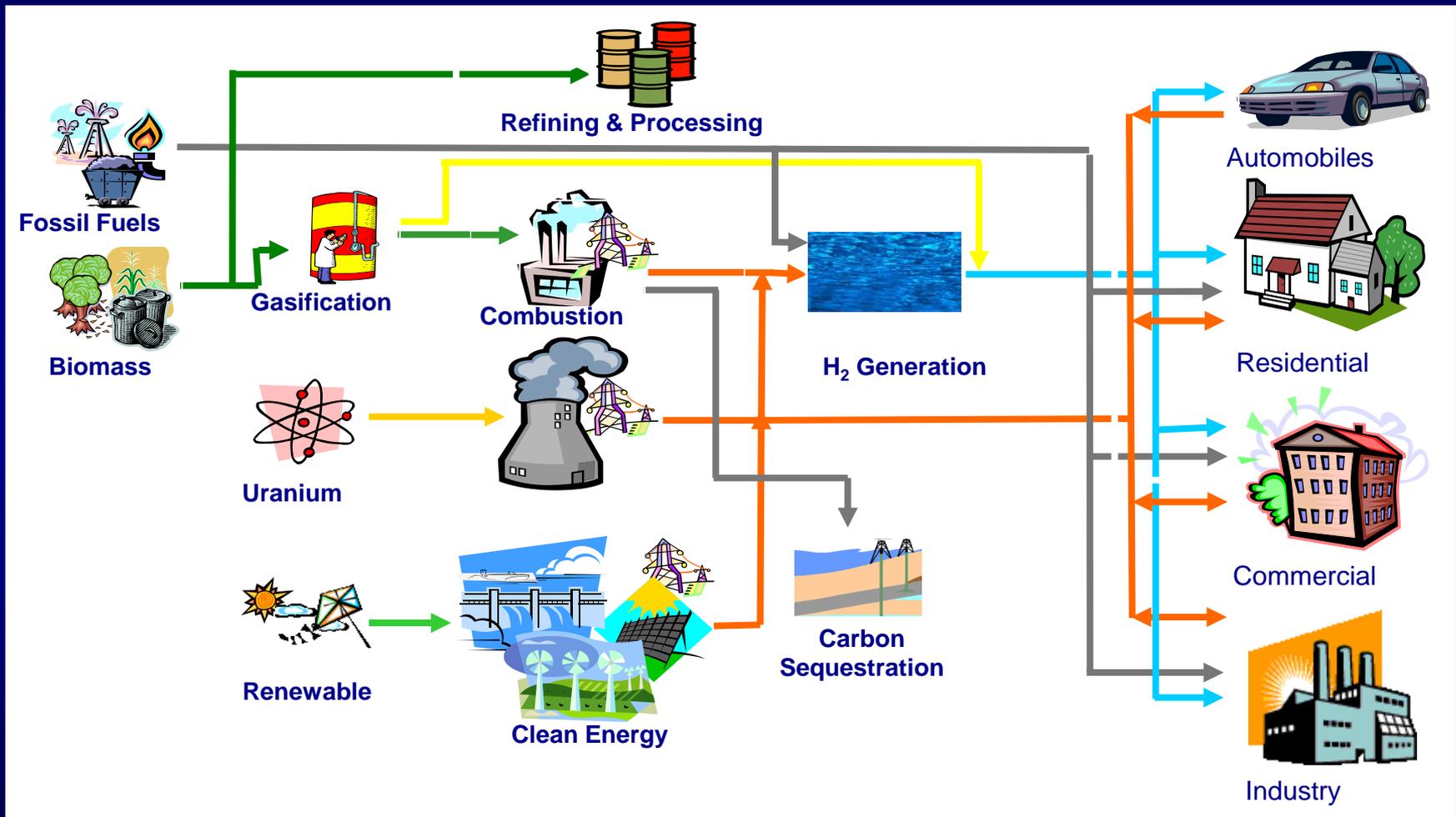
Advantages to Using NE-MARKAL

- Quick and relatively inexpensive to run
- Transparent to review
- Detailed and versatile framework
  - Multi-pollutant and Multi-Sector
  - Analysis of a wide range of climate, air quality and energy strategies
    - Single or multiple strategy analysis
    - Single state or entire northeast region
    - Linked to other models – REMI, CMAQ, BenMAP
- Integrated air quality and energy planning

NE-MARKAL Caveats

- While expansive in its coverage, it does not provide perfect representation of all sectors and technologies

- Should be used for comparative policy analysis

- Is not an energy dispatch forecast tool

THANK YOU!

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