Overview of Energy Master Plan Modeling Effort

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Objectives of Energy Modeling

• Inform the policy making process
  – Provide a systematic tool for analysis
  – Narrow areas of disagreement
  – Identify key drivers
  – Quantify tradeoffs
  – Identify the conditions under which certain outcomes occur

• Be credible and objective
  – Consistent with professional and academic standards
  – Transparent process
  – Allow for iterative stakeholder input
  – Acknowledge modeling capabilities and limitations
  – Able to respond to the process as it unfolds
Scenario Analysis

• Base case
• Other scenarios depending on the needs of the Energy Master Planning Committee and Stakeholders
• Categories of Scenarios
  – Different future scenarios whose assumptions are internally consistent, e.g.,
    • Macroeconomic, technologies (e.g., cost of solar power), major energy infrastructure investments/retirements
  – Policy Choices
  – Sensitivity cases
• Not all scenarios are equal
• The number of scenarios can explode so this needs to be managed carefully
Some Caveats

- Modeling choices depend on the scenarios and policies being modeled
- Modeling is better at forecasting differences than absolute values
- Modeling results may depend on important conditions, that must be kept in mind when reporting and discussing the results
- Modeling may not capture all issues of concern
- Uncertainty needs to be addressed
- MARKAL data set for New Jersey is still being developed by the vendor and a biomass data set being developed by Cook College
Energy Policy Modeling Platform

**MARKAL**
GEOGRAPHIC SCOPE: New England & Mid-Atlantic
PURPOSE: Energy Optimization Model including Petroleum, Natural Gas & Other Fuels; Technology and Fuel Assessment
OUTPUT: Energy Price Projections & Energy Emissions

**DAYZER**
GEOGRAPHIC SCOPE: PJM
PURPOSE: Grid model; Generation/transmission changes; Locational Marginal Prices; Unit Commitment; & Dispatch
OUTPUT: Electricity Price Projections & Power Plant Emissions

**R/ECON™**
GEOGRAPHIC SCOPE: New Jersey
PURPOSE: Economic & Environmental Impact Model
OUTPUT: Jobs, Gross State Product, Prices & Taxes

Data Collection and Screening Analyses

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