AGENDA

U.S. Energy Collaborative Analysis Initiative
2007 Workshop

DAY 1 *June 27, 2007*	*Activities*
8:00 am	Continental Breakfast
8:30 am	Welcome, introductions, initiative and workshop goals, initiative vision
9:30 am – 12:30 pm **(Break During Session)**	Concurrent breakout sessions (First Grouping)
	Topic #A – **Improve Behavioral Factors in Market/Choice Models and Tools**
	Topic #B – **Energy Model Data Resources I - Technology Characterization and Energy Transmission**
	Topic #C – **Integrated Energy and Environmental Scenarios**
12:30 pm	Lunch
2:00 pm	Present results/follow-up activities for Topics A, B and C
2:45 pm	Break
3:00 pm	Plenary session – **Modeling Aggressive Renewable Energy Goals (e.g. 25% by 2025)**
5:00 pm	Adjourn
Evening	Join together for social dinner together, off-site

DAY 2 *June 28, 2007*	*Activities*
8:00 am	Continental Breakfast
8:30 am – 11:30 am **(Break During Session)**	Concurrent breakout sessions (Second Grouping)
	Topic #D – **Improve Economic Impact Evaluation Tools and Methodologies**
	Topic #E – **Risk and Uncertainty in Energy Modeling**
	Topic #F – **Energy Model Data Resources II - Renewable Energy and Petroleum**
11:30 am	Present results/follow-up activities for Topics D, E and F
Noon	Working lunch to identify additional topics of importance for the initiative
1:30	Wrap-up - improve sharing of info/methods - and next steps
2:00	Adjourn

TOPIC A
IMPROVING BEHAVIORAL FACTORS IN MARKET/CHOICE MODELS AND TOOLS
DAY 1: 9:30 AM ~ 12:30 PM

High priority analysis questions to address during session:

- What is a better analytical way of representing choice?
- How do analysts better investigate and estimate behavioral parameters?
- How can analysts get a better sense of distributions when estimating parameters?
- What assumptions about behavior are implicit in existing modeling approaches?
- How does dynamic decision making intersect with discrete choice?
- What can one conclude about behavior from aggregate economic dynamics that reflect both individual agent choices (deliberate substitution) and agent population dynamics (firm expansion, contraction)
- How do key behavioral assumptions (e.g. (mis)management of depletion rents, optimality (or not) of energy efficiency decisions) influence policy conclusions?
- What are the behavioral challenges in representing R&D management?

Introduction: Brief intro of speakers and statement of session objective and structure *(5 minutes)*

Topic 1: R&D Modeling

Speaker 1: Bill Valdez, U.S. Department of Energy (DOE) - Office of Science *(10 minutes).* An R&D planning model would enable policy makers to understand the impacts of investments in basic and applied research in relationship to the accomplishment of key national energy and environment goals. R&D planning models might address questions such as, would accelerated development of certain classes of materials improve the efficiency of solar cells? Would investments in microbial genomics speed the development of cellulosic biofuels?

Presentation to cover:

- Current state of the art in behavioral factors in *R&D* modeling, to include a status update on analysis activities since ECAI WS 2006
- Provide views on high priority analysis questions

Topic 2: Policy Development and Assessment

Speaker 2 (Demo): Tom Fiddaman, Ventana Systems *(25 minutes)*

- Behavioral modeling philosophy
- Practical implications for managing the basic science portfolio
- Demonstrate techniques and results from modeling policy development and assessment, incorporating behavioral factors
- Provide views on high priority analysis questions above

Group Discussion *(30 minutes)*

- Q&A to address analysis questions and other areas of group interest
- Identify gaps, future analysis activities and potential for collaboration

BREAK *(15 minutes)*

Topic 3: Integrated Assessment

Speaker 3: Steve Smith, Pacific Northwest National Lab/Joint Global Climate Change Research Institute (PNNL/JGCRI) *(25 minutes).*

Integrated assessment models (IAMs) incorporate information across disciplines and multiple spatial and temporal scales. Integrated assessment models vary widely in their complexity, intended uses, and range of topics covered. When applied to climate change IAMs often produce estimates of how much climate change is likely to occur in the future, quantification of climate change drivers (e.g., anthropogenic emissions, land-use changes), analysis of mitigation costs, and the identification of technologies and policies that can reduce costs.

Presentation to cover:

- Current applications and discussion of associated issues faced when conducting an integrated assessment analysis
- Provide views on high priority analysis questions

Group Discussion *(30 minutes)*

- Q&A to address analysis questions
- Identify gaps, future analysis activities and potential for collaboration

Synthesis and Wrap-up *(40 minutes)*

Solutions identified in group discussion (and captured on storyboards) will be arranged and the group will layout steps to take action and identify potential collaboration

TOPIC B
ENERGY MODEL DATA SESSION I
TECHNOLOGY CHARACTERIZATION AND ENERGY TRANSMISSION
DAY 1: 9:30 AM ~ 12:30 AM

This session will involve discussions of areas of energy modeling where access to data is a currently a limiting factor. Each presentation will be followed by a facilitated discussion of challenges and potential avenues for improvement.

Modeling Data Issues in the Area of Technology Characterization *(80 minutes)*
Speaker 1: Susan Holte, U.S. Department of Energy (DOE) – EIA. Presentation on technology characterization data resources and limitations.

Group Discussion

- What are data issues/shortcomings faced by modelers?
- What data sources exist that might address these issues?
- What can/should be done to address the unmet needs identified?

BREAK *(10 Minutes)*

CURED: Collaborative for University Research on Energy Data
Speaker 2: Michael Leifman, U.S. Department of Energy (DOE) – EERE/PAE *(10 Minutes)*

Group Discussion of Modeling Data Issues in the Area of Electricity Transmission
(80 minutes)
Speaker 3: Dave Vidaver, California Energy Commission (CEC). Presentation on electricity transmission data resources and limitations.

Group Discussion

- What are data issues/shortcomings faced by modelers?
- What data sources exist that might address these issues?
- What can/should be done to address the unmet needs identified?

Synthesis and Wrap-Up *(10 minutes)*

TOPIC C
INTEGRATED ENERGY AND ENVIRONMENTAL SCENARIOS SESSION FOR THE ENERGY ANALYSIS COLLABORATIVE INITIATIVE
DAY 1: 9:30 AM ~ 12:30 PM

Integrating Energy and Environmental Modeling and Planning – Overview *(30 minutes)*

- Goal of this first section is to set the stage for the rest of the discussion.
- *Questions*
  - What are the typical types of analyses being performed on both the energy and environmental sides?
  - What are the primary needs that energy (air quality) analysts and planners have for improved data on air pollution (energy) forecasts, scenarios and data?
  - What opportunities exist to interconnect energy and environmental modeling? Planning?
  - What are some of the key challenges with data, methods and implementation?
  - How can analysis results be presented to decision-makers concisely and in a manner that makes sense to them?

- **Speaker 1: Michael Leifman, U.S. Department of Energy (DOE) - EERE** *(15 minutes).* Presentation by energy expert. Broad overview of challenges and opportunities for incorporating air pollution control regulatory scenarios and data into energy models, as well as the possibility of calibrating data and analytical methods between the two.

- **Speaker 2: Dan Loughlin, U.S. Environmental Protection Agency (EPA) - Research Triangle Park** *(15 minutes).* Presentation by air quality expert. Focus on broad issues first (how air quality scenarios are currently modeled and their impact on energy futures and the energy system), then discuss modeling results from regional MARKAL.

Quickly Change Session Speakers – *5 minutes (not a break)*

Panel Discussion – Integrated Energy and Environmental Modeling *(60 minutes)*

- *Key Questions*
  - What analysis are you doing that links energy-environmental issues?
  - What challenges are there in integrating energy-environmental analysis? Planning? How are you addressing:
    - National vs. regional vs. state vs. local
    - Treatment of uncertainty and risks
    - Multi-pollutant, multi-media and life cycle analysis
    - Dealing with trade-offs between environmental and energy options
  - How can analysis results be presented to decision-makers concisely and in a manner that makes sense to them?

TOPIC C
INTEGRATED ENERGY AND ENVIRONMENTAL SCENARIOS SESSION CONTINUED…

Presentations

- **Speaker 3: Denise Mulholland, U.S. Environmental Protection Agency (EPA)** (*15 minutes*). Discuss state framework to identify models and tools available (IMPLAN, MARKAL, etc.) that link energy and environment; show pathway of how to get from clean energy savings to emissions savings.

- **Speaker 4: Gary Kleiman, Northeast States for Coordinated Air Use Management (NESCAUM)** *(15 minutes).* Presentation on Current Methods and Tools for regional environmental analysis (MARKAL).

- **Speaker 5: Dwayne Breger, Massachusetts Division of Energy Resources (MA DOER) and RGGI** *(15 minutes).* A state energy office perspective on a regional initiative (IPM model and REMI model for economic impact analysis).

- Q&A on presentations *(15 minutes)*

BREAK *(10 minutes)*

Facilitated Discussion with Audience – Integrated Energy and Environmental Modeling *(60 minutes)*

- What is missing and should be addressed?
- Are there opportunities for collaboration in any of these areas?
- How can analysis results be presented to decision-makers concisely and in a manner that makes sense to them?

Synthesis and Wrap-Up *(15 minutes)*

PLENARY SESSION
MODELING AGGRESSIVE RENEWABLE ENERGY GOALS
DAY 1: 3:00 PM ~ 5:00 PM

Session Overview
Many U.S. states and organizations are developing aggressive renewable energy and fuel mandates and goals. Some examples include state Renewable Portfolio Standards (RPS), proposed federal RPS mandates, and the "25x'25" effort, the goal of which is to provide 25% of our electricity and fuel using renewables by 2025. This session will examine the results from recent studies that analyzed a few of these aggressive goals. It will also discuss the challenges for modeling such high penetration levels, in conventional energy models.

Questions that will be addressed:

- What are some aggressive energy goals that need to be modeled?
- What do analysis results of these goals tell us?
- What challenges need to be addressed to analyze these aggressive goals?
- What does a modeler do when their model implodes on these aggressive goals?
- How do you deal with inadequate resource data to back the goal?
- How will the analysis results be used by decision-makers?

This session will have two parts:

(1) Presentations *(60 minutes).* General overview of the goal, the model used, methodology and results from analyzing aggressive energy goals.

Speaker 1: Mike Eckhart, American Council on Renewable Energy (ACORE) *(15 minutes).* "The Outlook on Renewable Energy in America – Joint Summary Report"

Speaker 2: Professor Burt English, University of Tennessee *(15 minutes).* "Agricultural data and modeling of 25x'25"

Speaker 3: Chris Namovicz, U.S. Department of Energy (DOE) - EIA
(15 minutes). "Looking at RPS Policy at 15% and beyond"

Speaker 4: Thomas Jenkin, National Renewable Energy Laboratory (NREL)
(15 minutes). "Status of Renewable Energy Modeling and Analysis Partnership (REMAP)"

(2) Panel discussion and Q&A *(60 minutes).* An informal panel discussion on the challenges with modeling these goals. Observations by the panelists on challenges associated with data quality, model implosion, difficulty capturing financial incentives and economic factors, or any other specific modeling challenges you faced. Discussion with the audience.

TOPIC D
IMPROVE ECONOMIC IMPACT EVALUATION TOOLS AND METHODOLOGIES
DAY 2: 8:30 AM ~ 11:30 AM

Focus of Session: Economic impact evaluation methodologies and tools that can be applied to full range of energy efficiency and renewable energy technologies, projects and policies.

Analytical Questions to Address:

- What are the tools?
- What is the methodology behind the tools?
- Where are these tools found?
- Who is using them?
- What are the gaps and limitations to these tools, the pros and cons of the tools?

Presentations

Brief Introduction of Speakers *(5 minutes)*

Topic 1: Theory Behind Estimating and Analyzing Economic Impacts

Speaker 1: Dr. Michael Lahr, Associate Research Professor in the Center for Urban Policy Research at Rutgers University *(20 minutes)*

- Differences between models from a theoretical perspective, including input/output, econometric, time series, REMI and IMPLAN
- Address a key issue within modeling of adjusting for inter-regional trade
- How a model may be more accurate in principal
- Data issues confronted in modeling economic impact
- Potential improvements and gaps in tools and methodologies

Topic 2: Business Application of Economic Impact Evaluation

Speaker 2: Karl Jessen, Massachusetts Technology Collaborative (MTC)
(20 minutes)

- State level activity in economic impact evaluation: MA is performing an analysis of clean energy clusters in the state
- Clean energy companies were asked about company status, technologies and challenges
- Discuss preliminary outcomes of the analysis

Topic 3: IMPLAN and REMI Considerations

Speaker 3: Chris Hall, New York State Energy Research and Development Authority (NYSERDA) *(20 minutes)*

- NYSERDA has conducted an analysis using IMPLAN multipliers and is planning to replicate the analysis using REMI multipliers.
- Describe methodology used to model NYSERDA's programs using IMPLAN.

TOPIC D
IMPROVE ECONOMIC IMPACT EVALUATION TOOLS AND METHODOLOGIES CONTINUED…

Topic 4: Status update and Ongoing Analysis in Economic Impact Evaluation since ECAI WS06

Speaker 4: Skip Laitner, American Council for an Energy Efficient Economy (ACEEE) *(20 minutes).*

- To address and report on analysis activities identified at ECAI WS06 which include:
  - ✓ Activity No. 1 – Model inventory and best practices and identify strengths/limitations
  - ✓ Activity No. 2 – Full Accounting of Impacts
  - ✓ Activity No. 3 – Define Appropriate Relationships of Economic Parameters in Models
- Potential collaboration and next steps

BREAK *(15 minutes)*

Panel and Group Discussion *(60 minutes)*

Panel Q&A with featured speakers comprising panel *(25 minutes)*
Attendees and the facilitator will pose questions to be addressed by the featured speakers

Group Discussion *(35 minutes)*
Discussion is open to the group and featured speakers

- Q&A to address analysis questions and other areas of group interest
- Identify gaps, future analysis activities and potential for collaboration

Synthesis and Wrap-up *(20 minutes)*
Solutions identified in group discussion (and captured on storyboards) will be arranged and the group will layout steps to take action and identify potential collaboration.

TOPIC E
RISK & UNCERTAINTY SESSION
DAY 2: 8:30 AM ~ 11:30 AM

Introduction of Topic & Speakers: *(5 minutes)*

Featured Presentations *(80 minutes)*

Speaker 1: Sam Baldwin, U.S. Department of Energy (DOE) – EERE *(20 minutes).*

- Development of systems-based approaches to estimate the technical risk and uncertainty of R&D outputs
- Applying technical and market risk and uncertainty in program and technology benefits estimates

Speaker 2: Michael Leifman, U.S. Department of Energy (DOE) – EERE/PAE *(20 minutes).*

- The SEDS model methodology and design
- DOE's current and planned applications of the SEDs model in decision making

Speaker 3: Dan Loughlin, U.S. Environmental Protection Agency (EPA)
(20 minutes). Presentation on the use of Monte Carlo analysis in MARKAL modeling.

Speaker 4: Max Henrion, Lumina *(20 minutes).* Presentation on applying risk and uncertainty into decision making.

BREAK *(15 minutes)*

Group Discussion *(70 minutes)*

Risk & Uncertainty Updates: In this section, other professionals working in the area of Risk will provide brief (5-10 minute) updates on their work related to risk and uncertainty. Organizers will communicate this opportunity to participants (including states, regional groups, and other Federal agencies) in advance.

Panel & Group Discussion: Attendees and the facilitator will pose questions that will first be addressed by the featured speakers and then opened to comments from all participants.

- What are some major barriers to developing risk & uncertainty modeling or applying methodologies already in place?
- Are there actions (currently ongoing or that we could propose) that might help alleviate any of these barriers?

Synthesis and Wrap-Up *(10 minutes)*

TOPIC F
ENERGY MODEL DATA SESSION II
RENEWABLE ENERGY AND PETROLEUM
DAY 2: 8:30 AM ~ 11:30 AM

This session will involve discussions of areas of energy modeling where access to data is a currently a limiting factor. Each presentation will be followed by a facilitated discussion of challenges and potential avenues for improvement.

Modeling Data Issues in the Area of Renewable Energy

Speaker 1: Walter Short, National Renewable Energy Laboratory (NREL) *(80 minutes).* Presentation on technology characterization data resources and limitations.

Group Discussion

- What are data issues/shortcomings faced by modelers?
- What data sources exist that might address these issues?
- What can/should be done to address the unmet needs identified?

BREAK *(10 minutes)*

Group Discussion of Modeling Data Issues in the Area of Petroleum

Speaker 2: Jeff Pillon, Michigan Energy Office *(80 minutes).* Presentation on petroleum data and methods for analysis of short term supply, demand and prices.

Group Discussion

- What are data issues/shortcomings faced by modelers?
- What data sources exist that might address these issues?
- What can/should be done to address the unmet needs identified?

Synthesis and Wrap-Up *(10 minutes)*