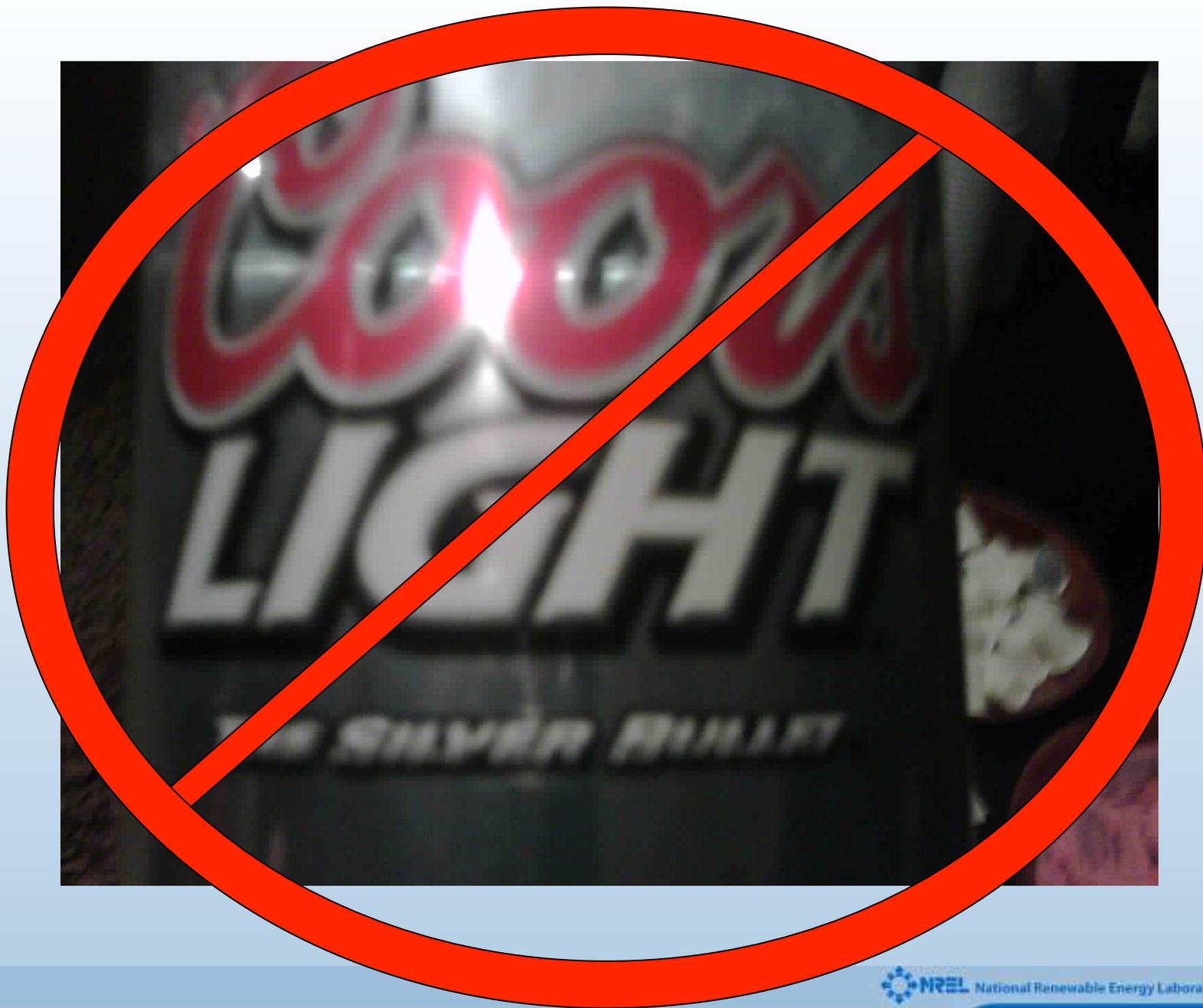


Modeling Renewable Energy Technologies in IAMs for Mitigating Future Climate Change

CCI/IA
Snowmass

August 2010



Motivations...

- Goal: Bring together energy economic modelers and IAM modelers to discuss the state of the art and research area needs for improving the representation of RE technologies for climate modeling.
- State of Modeling & Knowledge
- Create global community of EE/RE modeling experts & link with IAM community

Draft Multiyear Concept

- 2009:
 - Present state of art for RE and EE modeling and impact of capturing the techno-economic characteristics in IAMs via a case study. Case study will be of the U.S..
 - Discuss improvements to approach and layout plan for global effort (regionally based?) to apply best in class approach.
 - Identify research teams for each region and coordination plan
- 2010
 - Review case study results from other regions for enhanced energy economic modeling . Complete 25% of regions.
 - Publish Initial case study results
 - Review IAM results with improved RE/EE results
- 2011
 - Complete 50% of regions for enhanced RE/EE modeling
 - Publish Special Journal of results
 - Complete integration of techno-econ characteristics in IAMs
 - Review initial comparative IAM results
- 2012-2013
 - Complete 100% of regions and comparative assessments of IAM scenarios with updated RE tech-economic characterization.
 - Publish comparative results from multiple IAMs with updated RE characterizations.
- Recommend path forward for next phase of work.

2010 Agenda

- 9:00 Modeling Renewable Energy Technologies
 - Overview and brief summary of prior work
 - Doug Arent, (NREL) & John Weyant, (Stanford University)
- 9:30 Solar Resource assessment update
 - Carsten Hoyer-Click, German Aerospace Center
 - Dave Renne, NREL
- 10:30 *Break*
- 11:00 Wind resource assessment update
 - Detlef van Vuuren, PBL, The Netherlands
 - Hans Jørgensen, Risø DTU
 - Patrick Sullivan and Donna Heimiller, NREL
- 12:00 *Lunch*

2010 Agenda

- Day 1 con't:

1:00 Discussion of Data Needs and Processing

- Moderator: Nate Blair, NREL
- Observations: Elmar Kriegler, PIK; Steve Rose, EPRI
- Panelists: Patrick Sullivan, Detlef van Vuuren, Carsten Hoyer-Click, Dave Renne, Donna Heimiller

2:00: Other new modeling approaches and insights:

- James Nelson, University of California, Berkeley
- Tom Wilson & Steve Rose, EPRI
- Walter Short, NREL

3:30 *Break*

4:00 Scenario Assessment Interim Results - I

- Elmar Kriegler, PIK
- Toshihiko Masui, NEIS, Japan

5:15 *Adjourn*

2010 Agenda

- Day 2 :

9:00 Scenario Assessment Interim Results - II

- Volker Krey, IIASA
- Detlef van Vuuren, PBL

10:15 Break

10:45 Scenario Assessment Interim Results - III

- Leon Clarke, PNNL/ JGCRI
- Steve Rose, EPRI

12:00 *Lunch*

1:00 Where Do We Go From Here With the Renewables Initiative?
Open Discussion Lead by Doug Arent with John Weyant

3:00 *Closing of the Workshop*
General Discussion, Feedback and Suggestions for Next Year

A few takeaways from Last Year...

- Technology potential presents no meaningful limit on RE contributions, but...it's a competitive world...
- Time and place matter, including climate feedback
- “It’s the system stupid”
 - Spatial and technology interactions
 - Details can matter. E.g., Time, Space, Reliability, Carbon price, Flexibility...
- In stabilization, business models will be fundamentally different than today
- Handoffs between tech detail and aggregated/IAMs is a fundamental change in the way we operate (a good one?!!)