Modeling Renewable Energy Technologies in IAMs for Mitigating Future Climate Change

CCI/IA
Snowmass
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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.
A few takeaways from yesterday...

• 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?!!)