

To: CCSF Directors
From: Terry Jordan and Drew Harvell
Re: Review of CCSF's Marcellus Topical Lunch on 10 December 2009

Attendees (compiled from informal notes):

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Notes from discussion:

A. TWO Major efforts that should move forward energetically

1. develop an inventory that could serve as a CCSF white paper, quantified, of the uncertainties and risks, inclusive of

- i) community impacts
- ii) economic consequences

This would involve those on campus who have already pulled together some of this information (i.e., Susan Riha and Water Research Institute; Rod Howe's extension group), with additional input from others. We especially need input from someone who knows new innovative drilling approaches that might be less risky.

2. a systems research program: Kiernan Donaghy will move us ahead by organizing a working session on this topic

The Marcellus Shale gas production "situation" is an example of a category of complex energy-environmental challenge that we anticipate will pop up many times in the next century. These situations will require change in individual and community activities.

- i) we should use the Marcellus as an example but with the objective of developing effective practices for analysis/education/research/outreach/policy development of these complex challenges of adapting to new configurations of the energy-environment system (how to manage when we walk into a complex challenge without a clear view of the problem)
- ii) excellent overlap with the activities of Al George's group
- iii) we should meet ASAP in a working session to outline a major research proposal
- iv) a possible starting point would be with the New York State energy plan (from NYSERDA) (??use it to envision scenarios, and then a multidisciplinary team could consider how to frame the system that is involved and/or impacted?)
- v) include the large potential and the impacts of energy efficiency as a part of the energy-environment solution set
- vi) needed output --> decision making frameworks (who are the target audiences?)
- vii) we need to manage change, with knowledge of the costs of trade offs (note upcoming talk by a natural and environmental economist)
- viii) what are the natural currencies for costing out the trade offs? water is one
- ix) important to examine scenarios with major differences (and not simply slight variations on a single theme)

A campus-wide systems-based research program on the Marcellus as an example of upcoming energy-environment challenges is a great project for Cornell: it informs policy, and it is important.

B. To some extent, even disciplinary or “narrow” topics need additional research:

- 1) alternative fracking technologies that don't use as much (or any) water -- what is known to work elsewhere?
- 2) what NEW technologies can we develop
- 3) technologies for handling Ra-bearing waste water
- 4) considerations of the regulatory hurdles to be faced

C. To get to the bottom of the short-term issues involved in the Marcellus shale gas development, we need:

- 1) clear distinction between the genuine uncertainties and risks of the fracking and water use versus of poor management of well site activities
- 2) better recipe for water testing strategy
- 3) a total accounting of green house gas emissions of shale gas production versus coal mining versus other existing oil/gas technologies that Marcellus may displace

D. Suggestions to better leverage the knowledge pool:

- 1) we should involve Binghamton University and probably other colleges in the area impacted by Marcellus shale development in a region-wide workshop
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