

Ad Lucem: Modeling of Market Transformation Pathways Workshop Agenda

Lawrence Berkeley National Laboratory, Berkeley, California

Friday, February 17, 2012

8:30 – 9:00	REGISTRATION & BREAKFAST
9:00 – 9:10	Welcome Adam Cohen, Fellow
9:10 – 9:50	Solar: The Social Phenomenon Danny Kennedy, Sungevity
9:50 – 10:15	SunShot overview & Ad Lucem objectives Aimee Gotway Bailey & Adam Cohen, Fellows
10:15 – 10:30	BREAK
10:30 – 12:00	Morning breakout sessions <ol style="list-style-type: none"> 1. Modeling solar technology <u>market dynamics</u> Adam Cohen, Fellow 2. Modeling solar energy <u>technology evolution</u> Aimee Gotway Bailey, Fellow 3. Customer <u>decision-making</u>: Residential/Individual Christina Nichols, Market Transformer
12:00 – 12:30	Reports from morning breakout sessions
12:30 – 1:30	LUNCH & debate preparation
1:30 – 2:00	Debates A. Is it possible to construct accurate predictive models of collective human behavior? B. Is a consumer's decision-making process for adoption of solar energy technologies similar to the process for other technologies?
2:00 – 2:15	Guidance for afternoon breakout sessions
2:15 – 3:45	Afternoon breakout sessions <ol style="list-style-type: none"> 1. Modeling solar technology <u>market dynamics</u> Adam Cohen, Fellow 2. Modeling solar energy <u>technology evolution</u> Aimee Gotway Bailey, Fellow 3. Customer <u>decision-making</u>: Utility/Group Christina Nichols, Market Transformer
3:45 – 4:00	BREAK
4:00 – 4:30	Reports from afternoon breakout sessions
4:30 – 5:30	Informal panel discussion Kenneth Gillingham (Yale), Charles Macal (Sandia National Lab), Jessika Trancik (MIT) <ul style="list-style-type: none"> ▪ Re-visiting workshop objectives and their alignment with SunShot goals ▪ Opportunities for discovery and applications to solar market transformation ▪ Obstacles in realizing potential: data, conceptual, and policy limitations
5:30	Closing remark

1. Modeling solar technology market dynamics

The diffusion of innovations within a population is a social process. To fundamentally and enduringly change a target market, one requires a basic understanding of the complex relationships between market participants and the underlying market structure. In this session, we will discuss how mathematical tools used in complexity science and computational social science can be adapted to model solar energy technology market dynamics.

2. Modeling solar energy technology evolution

Technology evolution is affected by many drivers, including measures to reduce cost and increase performance and functionality. Other factors such as aesthetics, environmental impact, and the human-technology interface play critical roles in molding products. A fundamental understanding of the process of technology evolution will provide much-needed insights into mechanisms for increasing the rate of technological progress and choosing optimal strategies for R&D investment. In this session, we will discuss conceptual and mathematical frameworks for understanding technological evolution in order to direct intervention.

3. Customer decision-making

Morning: Residential/Individual

Market observers often fail to recognize the complexity of an individual's decision-making process leading to product adoption. Upfront cost and relative advantage are seldom the main motivators, especially for an early adopter during the nascent stage of a technology. As the solar market expands, anticipating how residential consumer's (adopter's) decision-making process might evolve will become increasingly important. In this session, we will discuss how behavioral economics and computational social science can be used to forecast adoption patterns.

Afternoon: Utility/Group

Group, corporate, or (for many energy decisions) utility leadership/managers make decisions regarding technology adoption that are driven by many considerations - policy incentives, regulations, and the energy market, as well as institutional behavioral influences in the context of U.S. society. And, utilities plan for fuel supplies over a long time horizon (30 years or longer). Can adoption patterns be modeled within such a complex system to for a regulated entity such as the utility/institutional decision maker(s)? What metrics should be researched? If financial incentives remain most powerful, what level and type of financial incentive can be modeled for best use of public resources, over what time horizon?

Debate format

You have been randomly assigned to a debate topic group (**A** or **B**) and to a **Pro** or **Con** group. You may personally disagree with the position that you've been assigned. Nonetheless, it is your job to design a convincing argument. During lunch, your group will frame its position and choose a representative. After lunch:

1. A coin toss will determine if topic A or B is debated first.
2. A coin toss will determine if Pro or Con will argue first.
3. **Four minutes** are allocated to each group to **make an argument & three minutes** for responses from each group.