ENERGY, ENVIRONMENT, ECONOMICS
“THE THREEES”

EXTERNALITIES OF ENERGY GENERATION

RIC HARD G. LUGAR CENTER FOR RENEWABLE ENERGY
SPRING FORUM

J.W. (Jim) Wheeler
jwheeler@pqrlc.com
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EXTERNALITIES – USEFUL THEORY PRONE TO SERIOUS UNCERTAINTY AND POLITICAL ABUSE

- Pervasive Positive and Negative Externalities
  - Pollution
  - Knowledge produced by scientific research
- Externalities (a.k.a., market failures) often used to justify government intervention
  - Done correctly, outcomes can be improved – incorrect intervention can make things worse or trigger serious unintended consequences
  - Often do not comprehend the magnitude or incidence of externalities, often even the net sign
  - Most externality analyses focus narrowly on a perceived problem or benefit w/o addressing the complex positive and negative interaction and ripple effects – pseudoscience far too common
- Externality arguments prone to abuse by advocates and entrenched stakeholders
  - Any time someone disagrees with a current market outcome they justify changing it by claiming correction of an externality
  - Participants often have strong incentives to lie, distort, and engage in brinksmanship
- Even those of us who believe themselves to be neutral and scientific face major bias risks
FORECASTING IGNORANCE AND BIAS

- **Intolerance Ignorance** results from stakeholders unwilling or unable to consider or recognize some outcomes and build their forecasts/analyses on false knowledge or false judgments.
  - Such false truths may result from overreliance on individuals and groups averse to recognizing possible assumptions/relationships/results that challenge their worldview.

- **Personal or Communal Ignorance** results from lack of knowledge or awareness.
  - Particularly acute in groups or communities who by definition assemble because of similar viewpoints and who may accordingly be less willing to consider others’ views and knowledge not known within the group.

- **Novelty Ignorance** stems from the inability to anticipate and prepare for external factors (shocks) or internal factors such as “changes in preferences, technologies, or institutions.”

- **Complexity Ignorance** results when information may be available but insufficient tools are available to analyze the data.
  - Key interrelationships, hidden dependencies, feedback loops, and other factors that impact system stability may remain hidden.
IMPLEMENTATION CHALLENGES

• Even when a policy solution is pursued, major sources of planning bias exist
  • For example, in large scale infrastructure investments, historical data suggests that even when cost and demand forecasts are combined in detailed cost-benefit analyses, the results are not only wrong, but by several factors

• Optimism Bias
  • Optimism bias is self-deception: human judgment is generally optimistic due to overconfidence. Thus people will underestimate the costs, completion times, and risks of planned actions, whereas they will overestimate the benefits of the same actions

• Strategic Misrepresentation
  • Here, when forecasting the outcomes of projects, forecasters and planners deliberately and strategically overestimate benefits and underestimate costs in order to increase the likelihood that it is their projects, and not the competition’s, that gain approval and funding