



# Department of Energy

## New Challenges for Energy Modelers

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# Long Term Oil/Energy Market Forecasts

## Old Paradigm

- **Exogenous economic projections drive energy service demand projections,**
- **Modified by demand elasticities & non-OPEC supply elasticities.**
- **Oil prices selected that are consistent with growth and elasticity analysis leaving a call on OPEC.**
- **Call on OPEC assumed to be met.**



# Long Term Oil/Energy Market Forecasts

## New Paradigm?

- **Exogenous economic projections still drive energy service demand projections,**
- **Bottom-up analysis of non-OPEC supplies and non-conventional resource production.**
- **Estimate OPEC investment and supply strategy (e.g., maximum oil price that does not wreck world economy).**



## Long Term Oil/Energy Market Forecasts

### **New Emphasis On:**

- **Estimating the supply of non-conventional, non-OPEC, oil substitutes (CTL, bitumen, oil shale, heavy oil, biofuels, etc.) using “bottom-up” analysis.**
- **Moving away from supply elasticities to field-by-field estimates of future supplies.**
- **Estimating impact of alternative motor vehicles (plug-in hybrids, etc.).**
- **Estimating the changing role of energy in the world economy.**
- **Estimating the effect of higher energy prices on sustainable economic growth.**



# Energy Market Forecasts

## **Challenges – Realistic Assessment of:**

- **Decision making in an uncertain policy environment.**
- **Available financing.**
- **Time path needed for “technology learning” for unconventional/advanced technologies.**
- **Project costs and competition for scarce generic resources (materials, engineering services, fabrication and construction).**
- **Political/regulatory impediments (NIMBY, licensing, emission offsets, limited access to foreign capital in LDCs).**
- **Detailed resource supplies by region.**



## Is This the Right Path?

- **Requires lots of detailed estimates.**
- **Accepted methodology to estimate many of the needed inputs does not exist.**
- **Could rely on modelers' judgment calls about topics that they are not necessarily expert in.**
- **The net impact of all of the detail may only be understood through trial and error.**
- **Requires peer review by many experts who are not modelers.**