

The 2050 Energy/Climate Challenge

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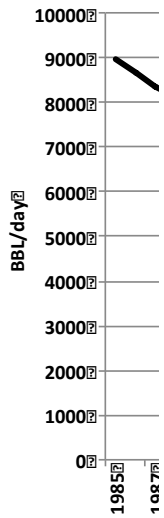


The Message

There are issues that will be important in 2050 (and beyond) that need more attention now.

Forecasting: 32 Years Ago

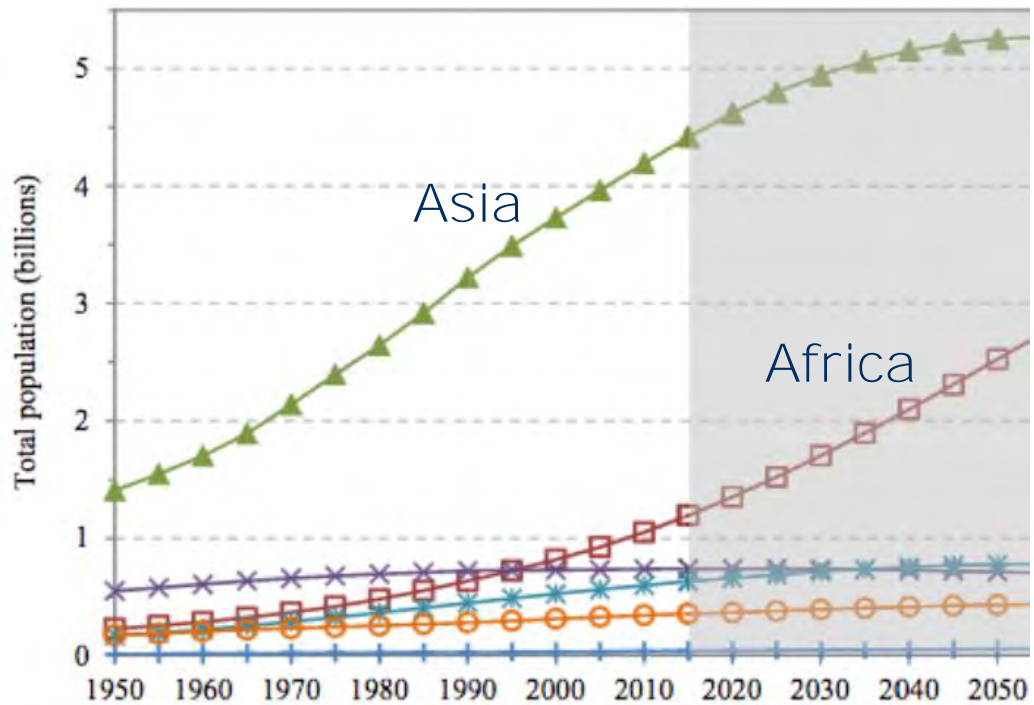
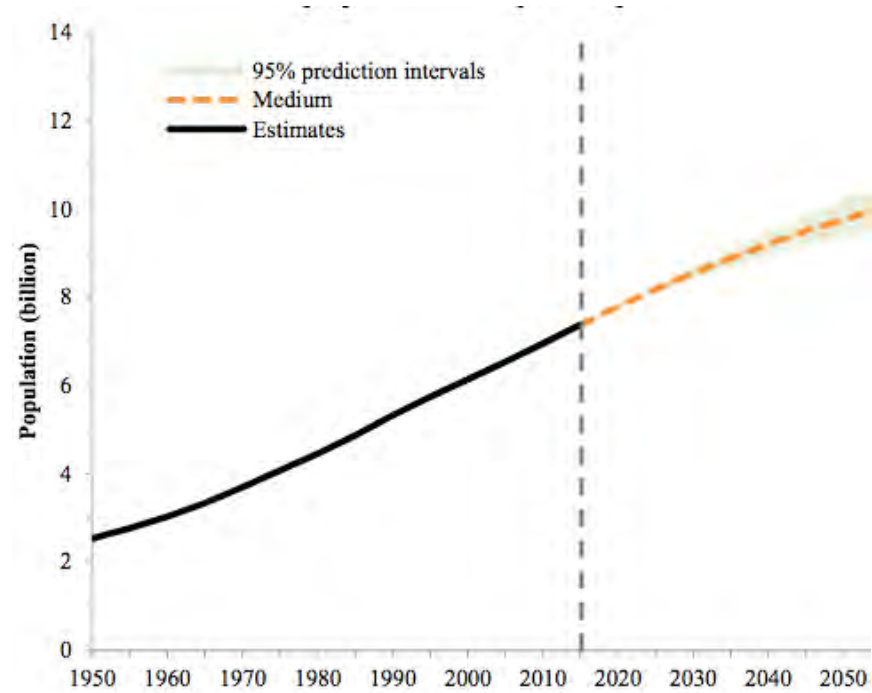
US Oil Production



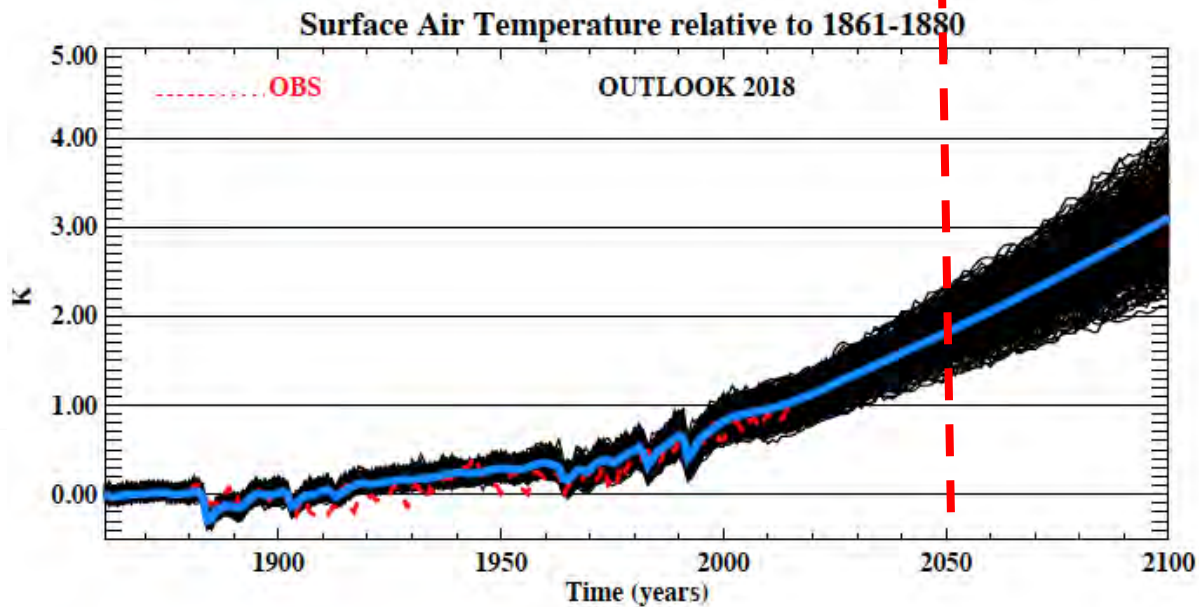
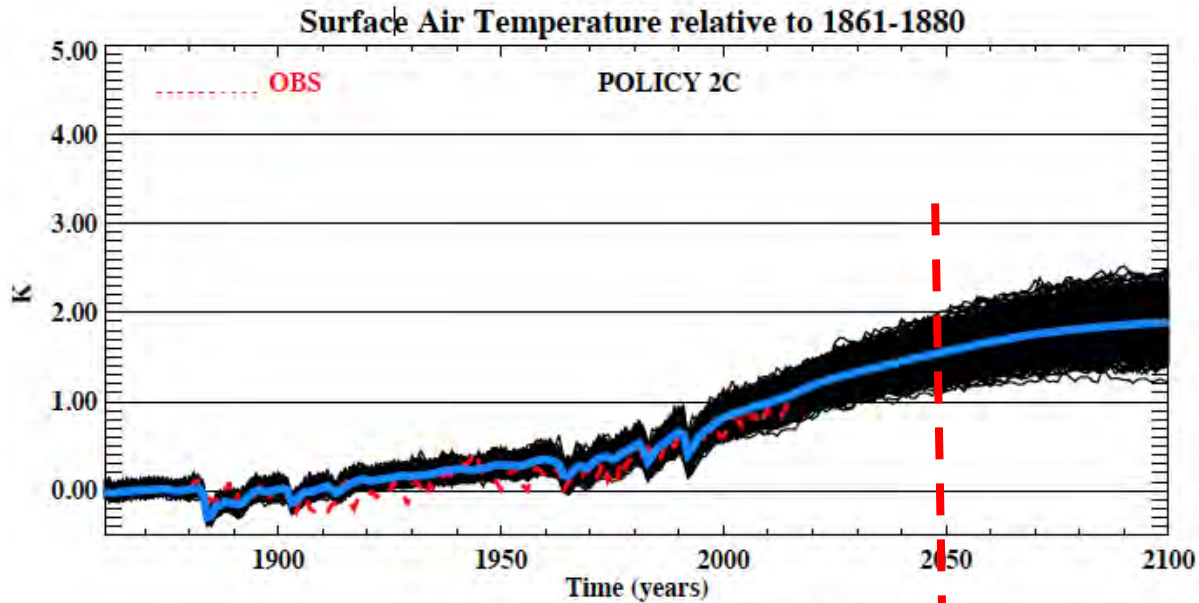
Model Results to Illustrate

- MIT EPPA and IGSM
 - 2018 Outlook (in process)
(similar to IEA WEO New Policies)
 - 2°C scenario
- IEA WEO Sustainable Development
 - 2°C Scenario
 - Other objectives
- **Shell “Sky”**
 - 2°C Scenario

Inertia: Population

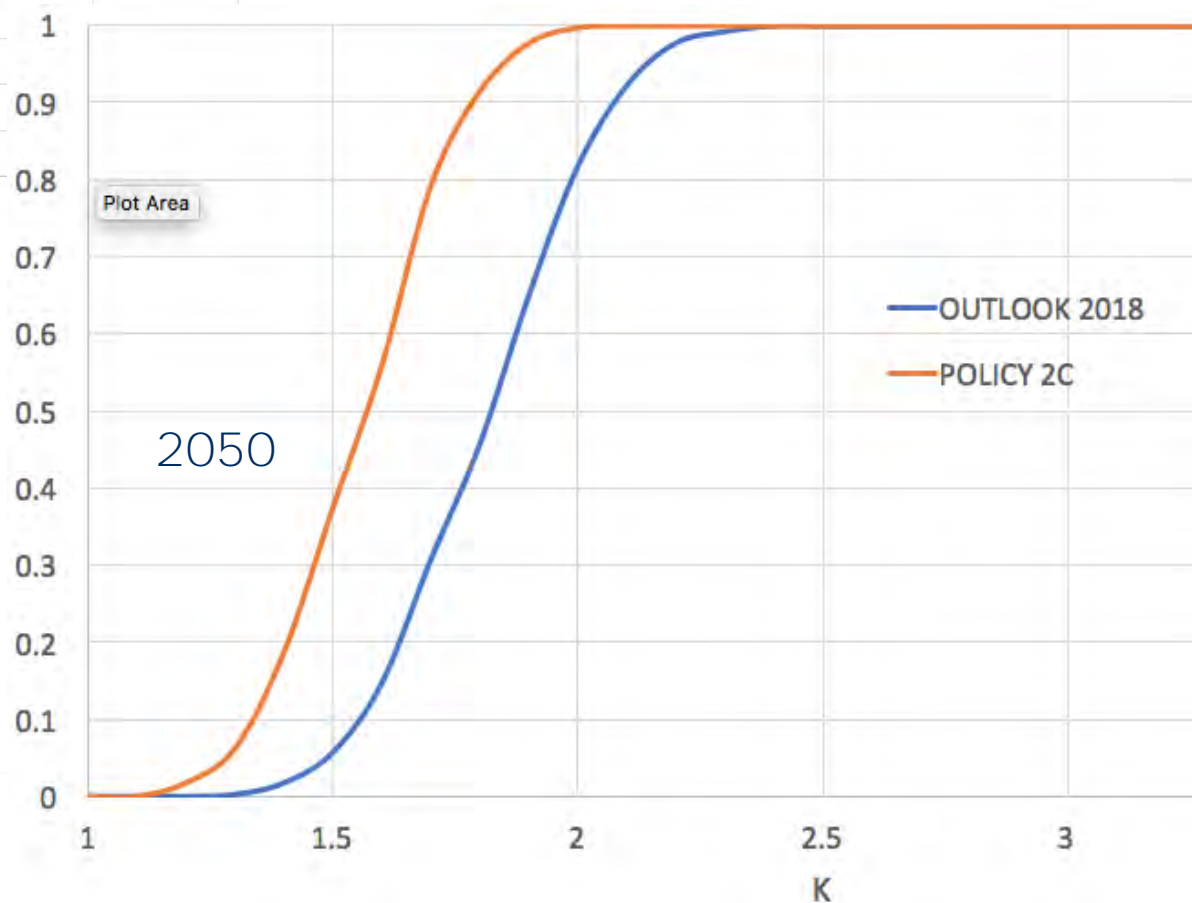
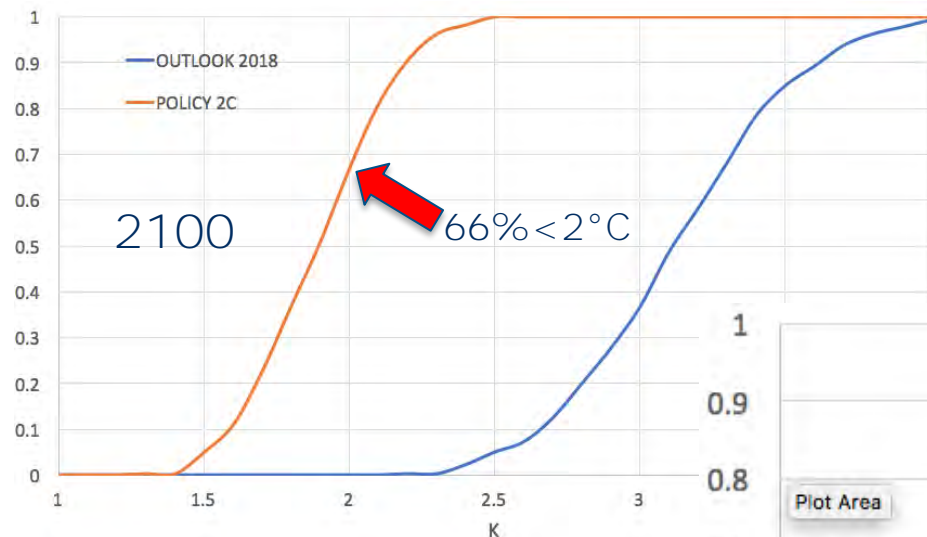


Inertia: Climate

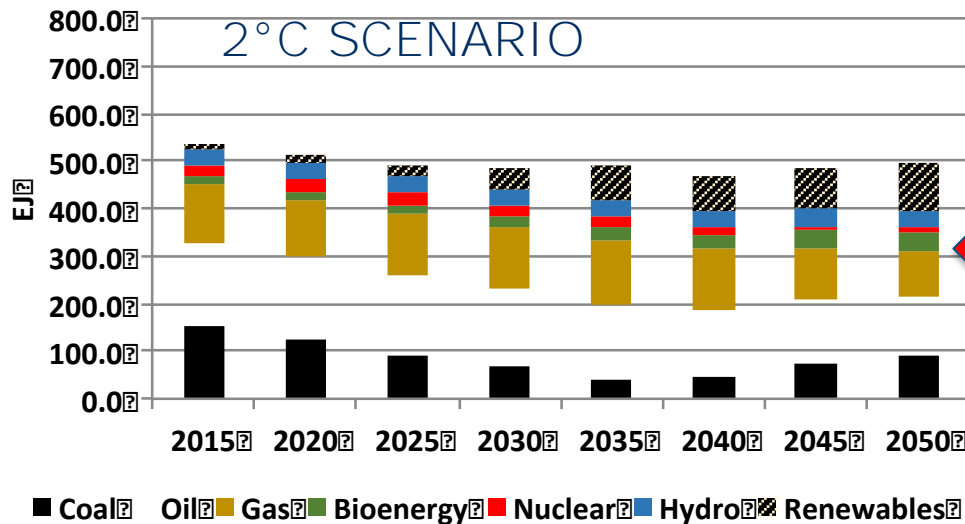
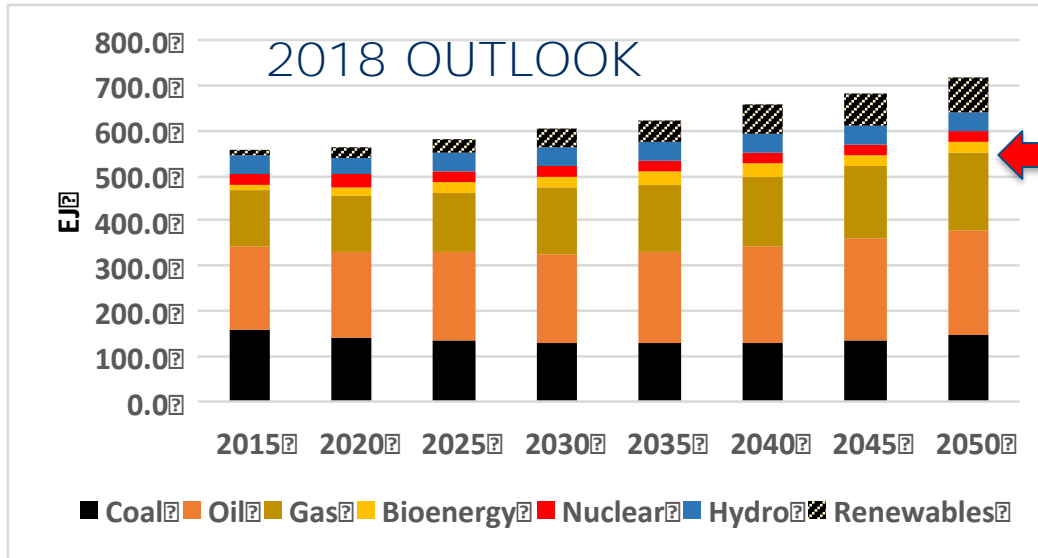


Inertia: Climate

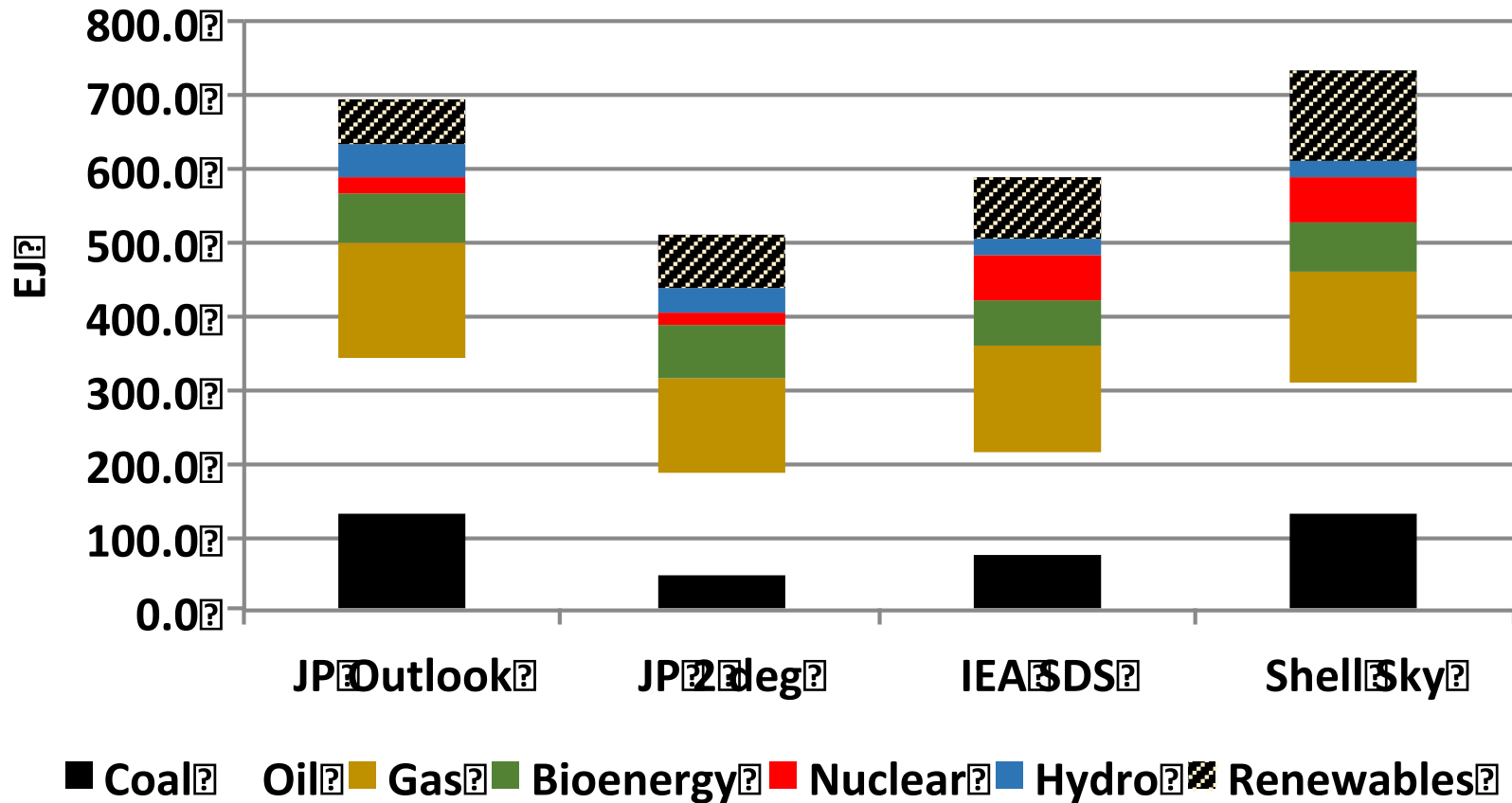
Probability of air temperature staying below given value, relative to 1961-80 mean, conditioned on emissions scenario



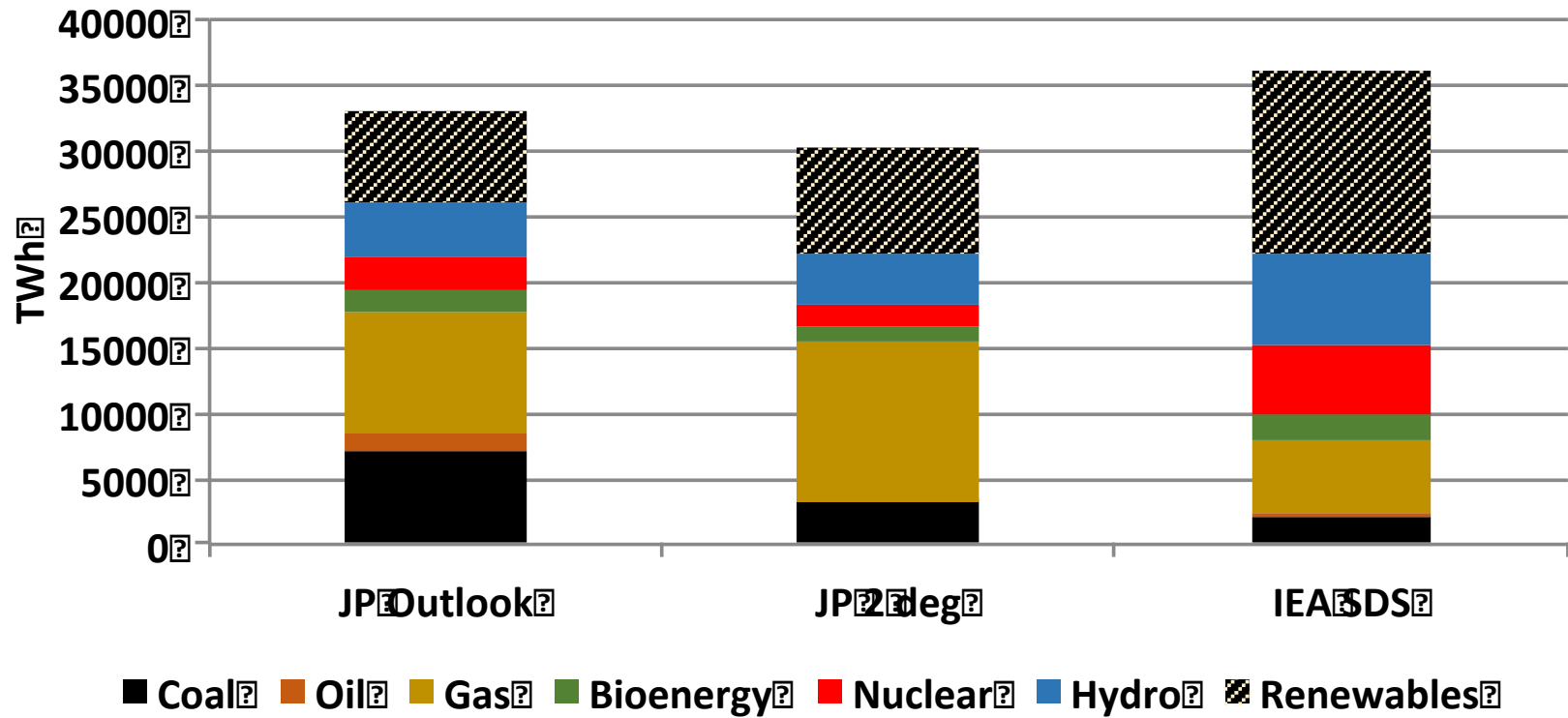
Inertia: Primary Energy



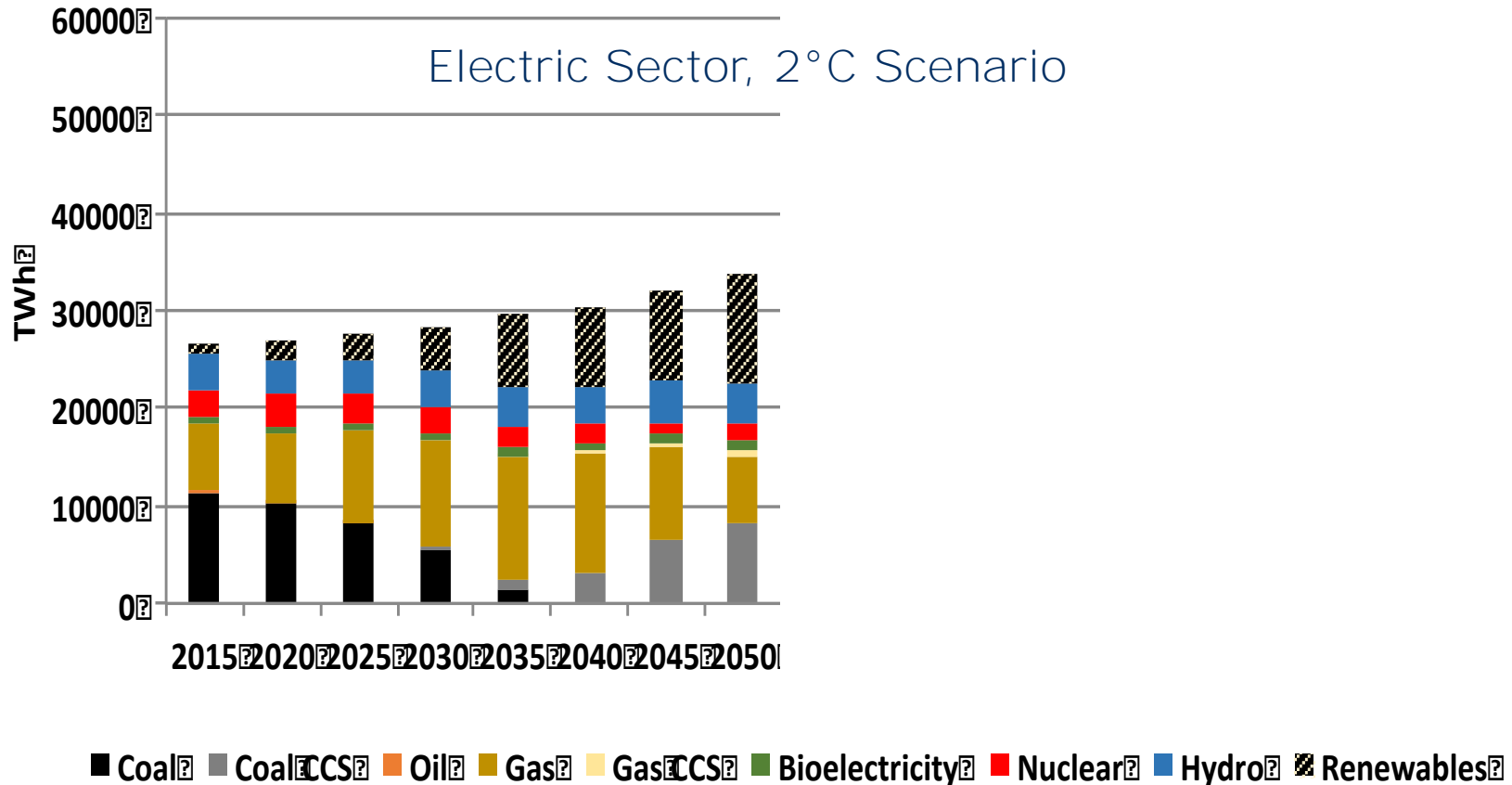
Primary Energy in 2040



Electric Sector in 2040



But . . . Preparing for What Comes After?



Evidence: Response to Paris Article 4, ¶9

“All parties . . . communicate long term low greenhouse gas emissions development strategies”

- 8 to 10 now on FCCC website
 - Mainly mid-century strategies
 - Diverse approaches, mainly model studies
 - Provide insight, but . . .
- Many lack links to near-term effort
 - Not see NDC as first step in LT strategy
 - **“not blueprints for action” or “not intended to define concrete near-term activities”**

Near-Term Actions (Not for Current NDC)

- R&D and demonstration
- Others implied by the transition, with long times to fruition
- Differ by country . . . but e.g.,
 - Emissions pricing regimes
 - Foster public acceptance of needed technologies
 - Prepare to manage stranded assets
- Short/long-term integration will
 - Add credibility to objectives/vision
 - Increase confidence in Paris regime

An Incautious Forecast: in 2050

- Some version of the Paris pledge-&-review regime is still in effect, and
 - Climate has greater political salience, but
 - Confounding international stresses remain
- Global emissions are somewhere between our Outlook and 2°C paths
- Preparation for the more wrenching transition to come is incomplete

Anchor long-term strategies in
near-term actions

Thank You!

