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Challenges for Widespread Renewables Deployment

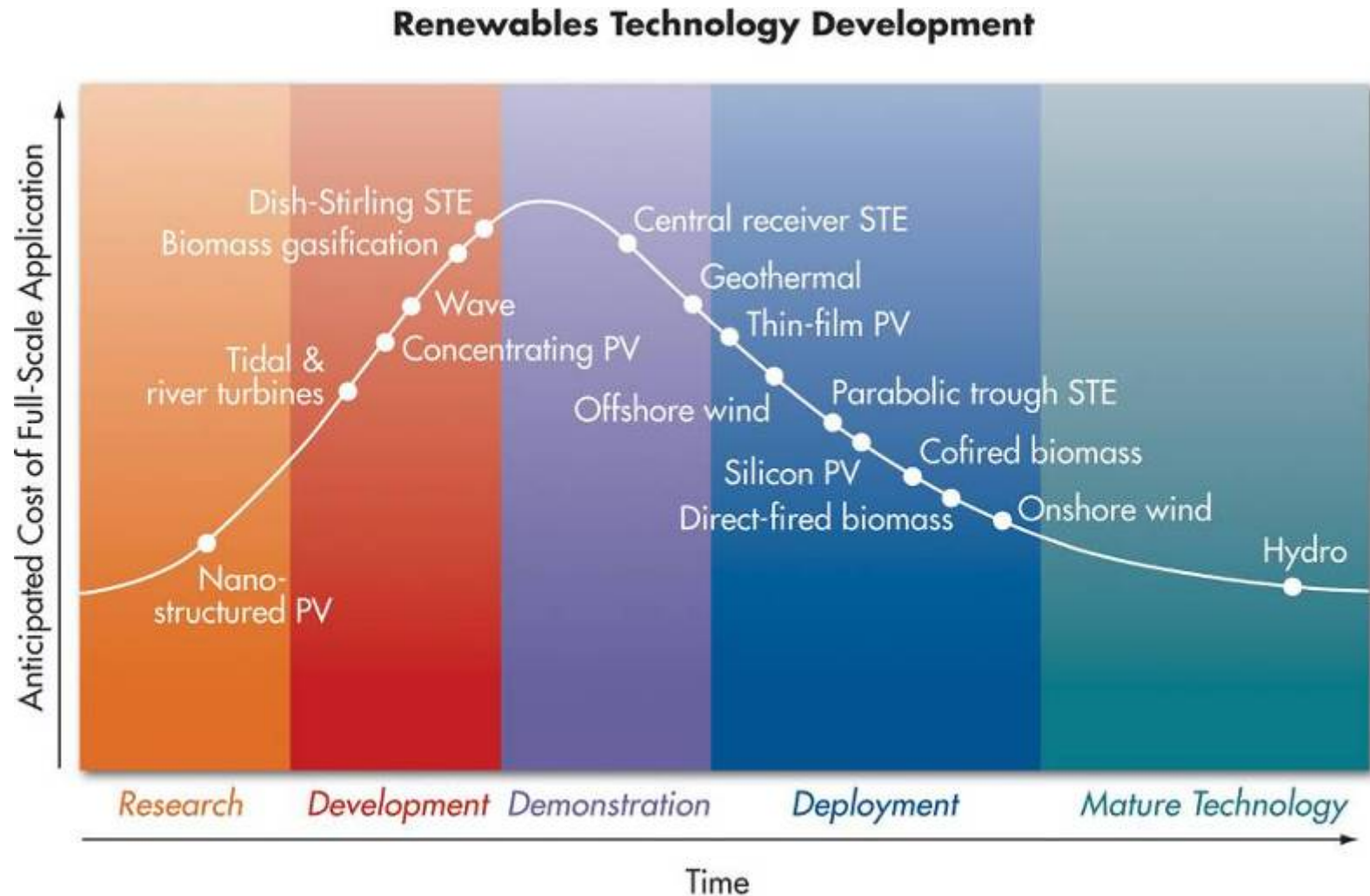
Bryan Hannegan

Vice President, Environment & Generation

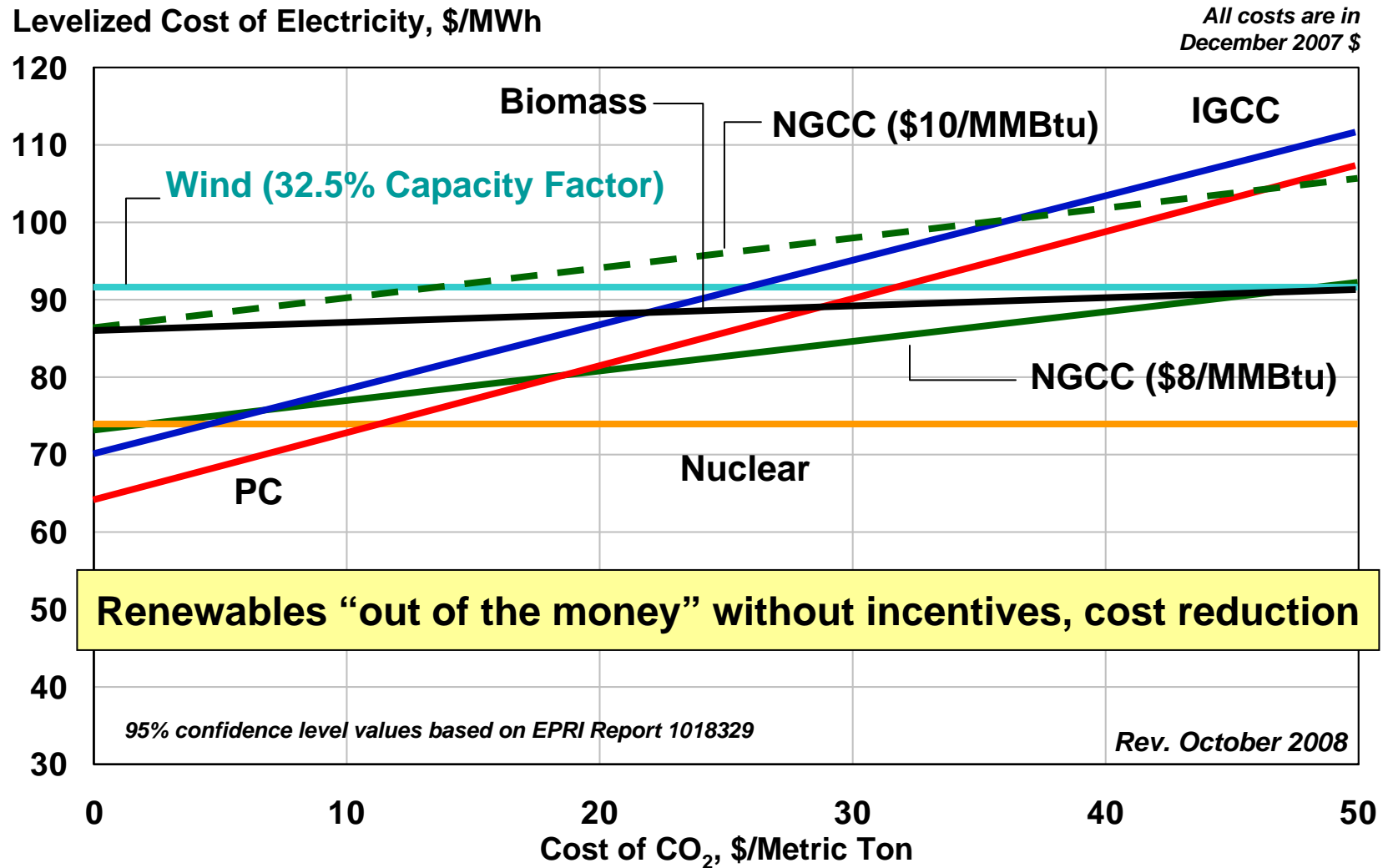
EIA 2009 Energy Conference

April 7, 2009

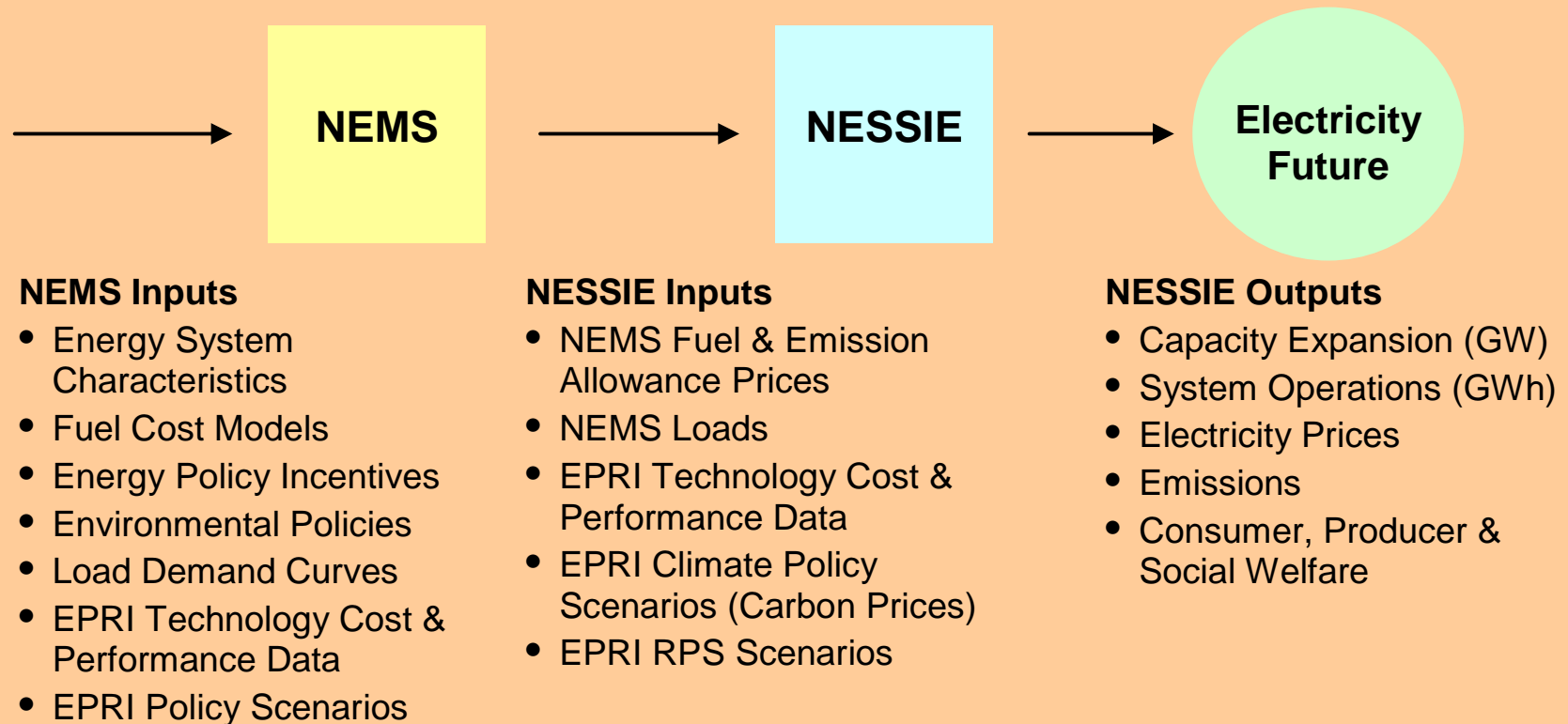
Renewables in Various Stages of Maturity



Comparative Levelized Costs of Electricity – 2015



EPRI's NEMS-NESSIE Modeling Framework



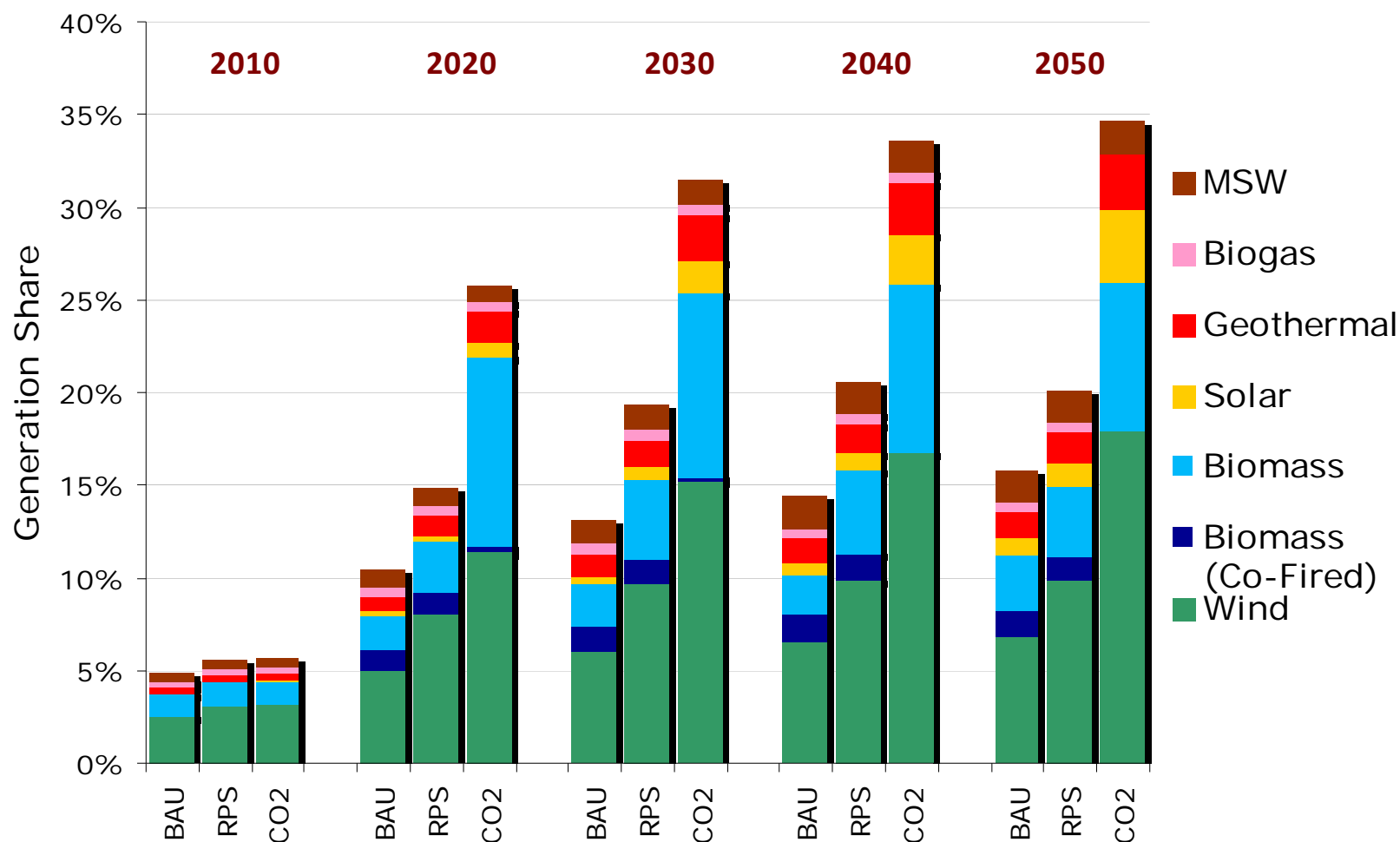
Energy Scenarios

Future Scenario	Name	PTC	RPS	CO ₂ Price
No new policy	BAU	Yes	No	No
Federal RPS	RPS	Yes	Yes	No
Federal carbon policy	CO2	Yes	No	Moderate

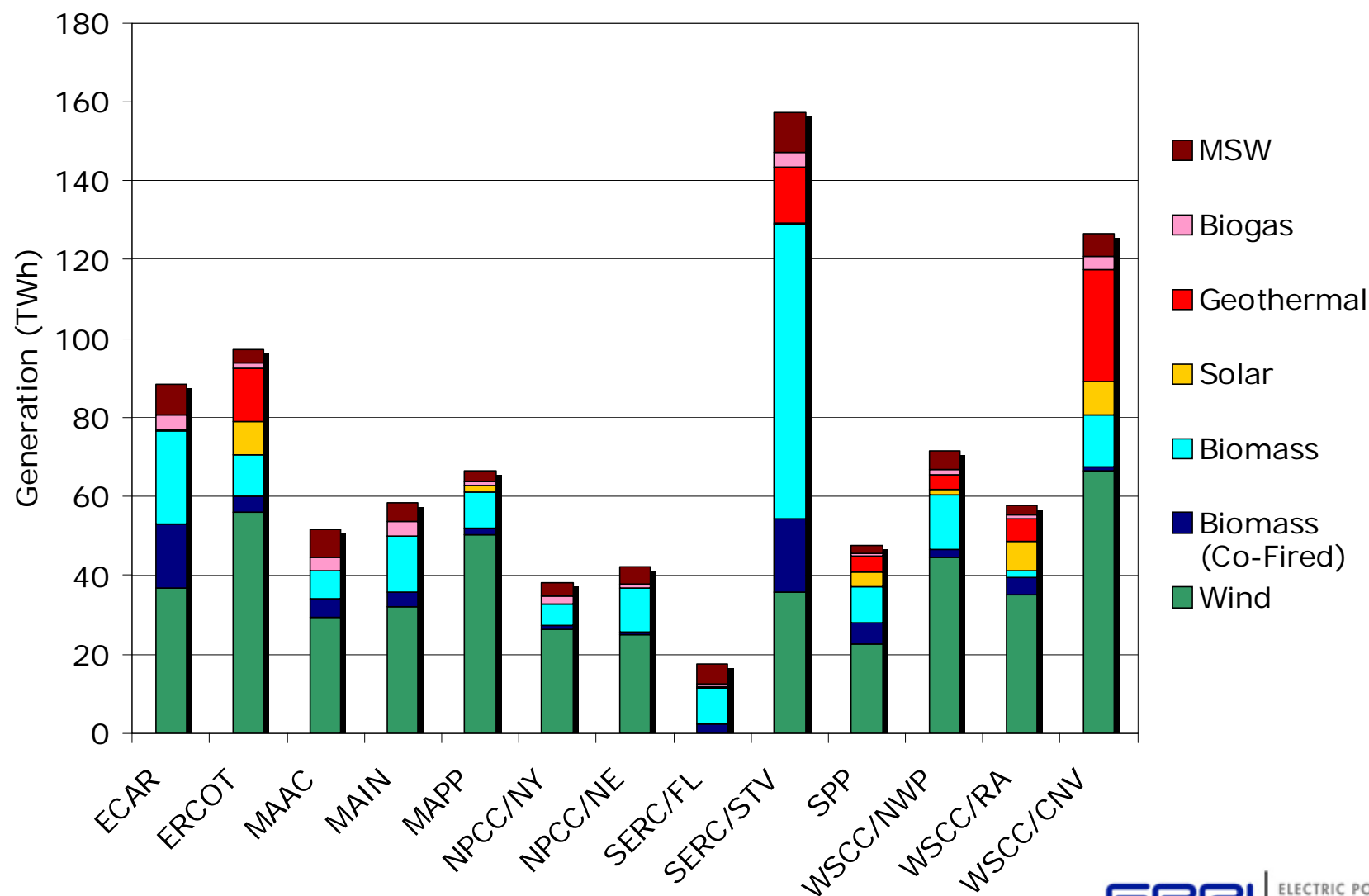
- Load growth based on AEO 2008
- RPS policy assumptions based on the revised Bingaman Bill
- For carbon case, CO₂ price in 2015 is approximately \$27 per ton
- Natural gas prices vary from \$4.91 to \$7.28/MMBtu

Source: Role of Future Generation Options for the U.S. Electric Sector, EPRI Report 1015805, March 2009 (available at epri.com)

NESSIE Renewable Share of Total Generation



NESSIE Renewables by Region – 2030 RPS

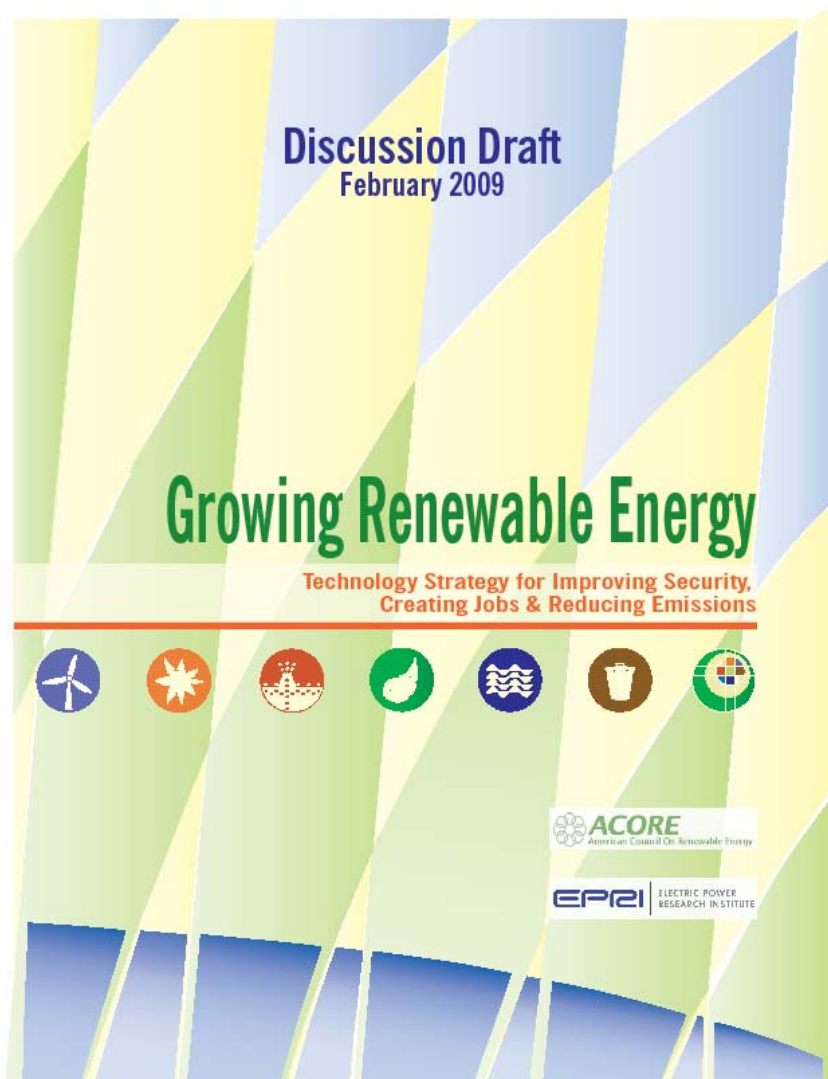


Key Issues for Further Study

- National or local?
- “Wind-PS” or carve-outs for others?
- Resource economics/limitations (esp. biomass)
- Energy storage, gas backup or integration issues?
- What triggers new transmission build?
- Tradeoff with climate policy
 - RPS or PTC lifts renewables
 - CO₂ price lifts renewables **and** retires fossil

Renewables are here → make them affordable, reliable

ACORE – EPRI Renewable Technology Strategy



To review the discussion draft
and contribute your ideas, send
contact information to:

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Technology Areas in Plan



Solar Energy - PV



Geothermal Energy - Power Production



Integration



Bioenergy - Fuels



Waterpower



Bioenergy - Power Production



Solar Energy - Central Station



Wind Power



Geothermal Energy - Space Heating

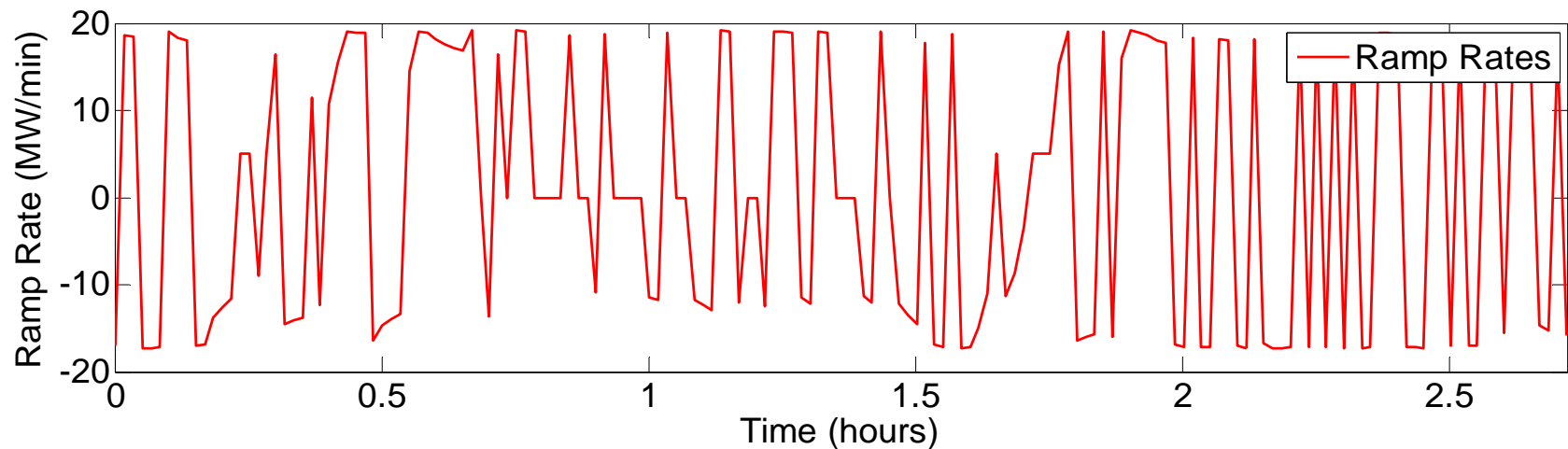
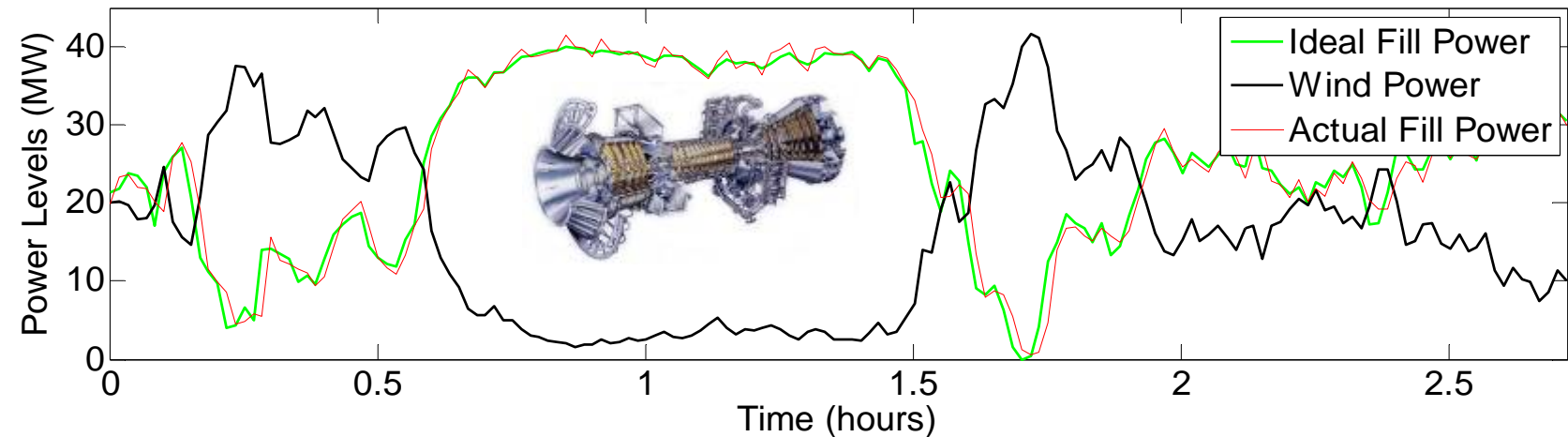


Waste to Energy

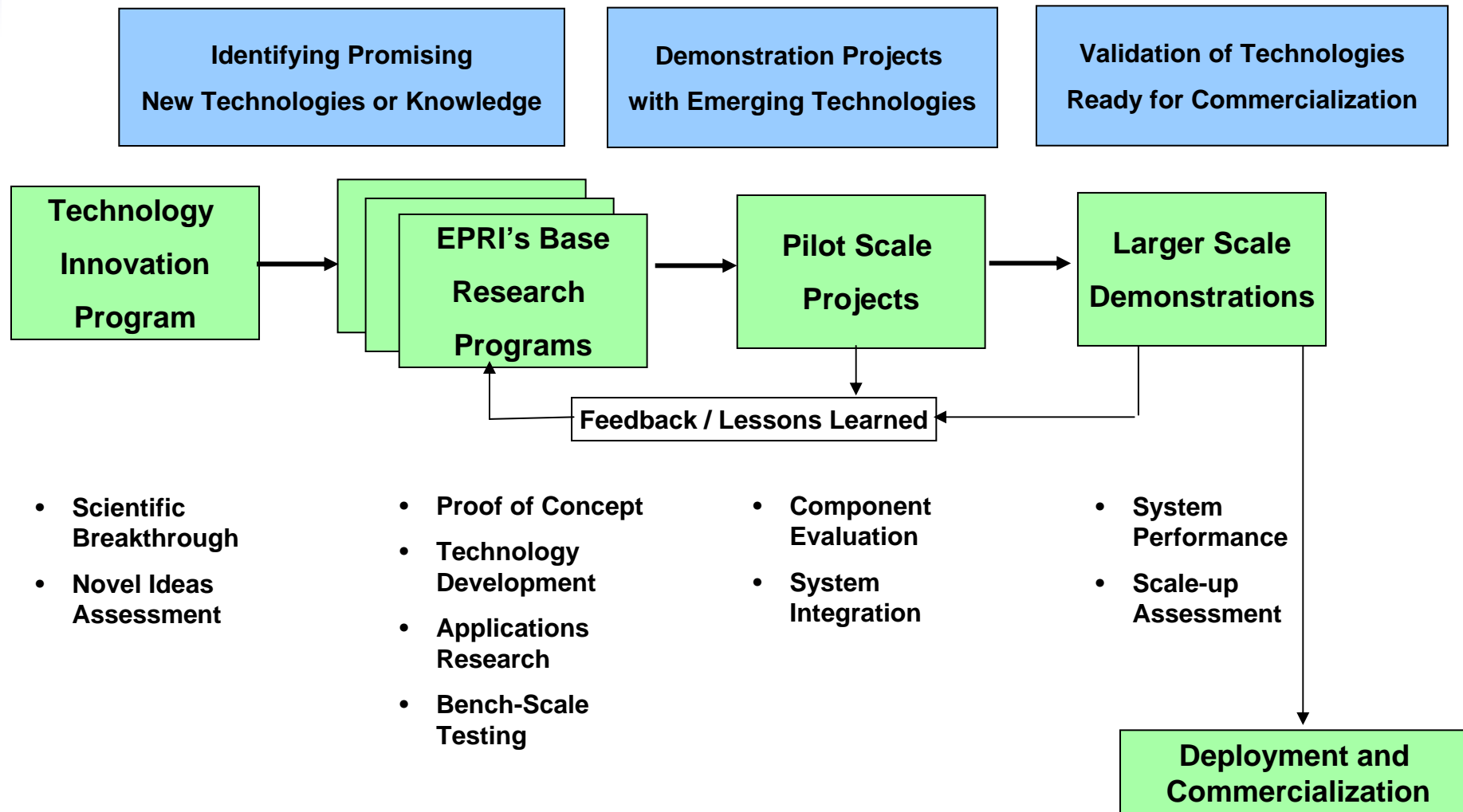


Integration Cannot Rely on Gas CTs Alone

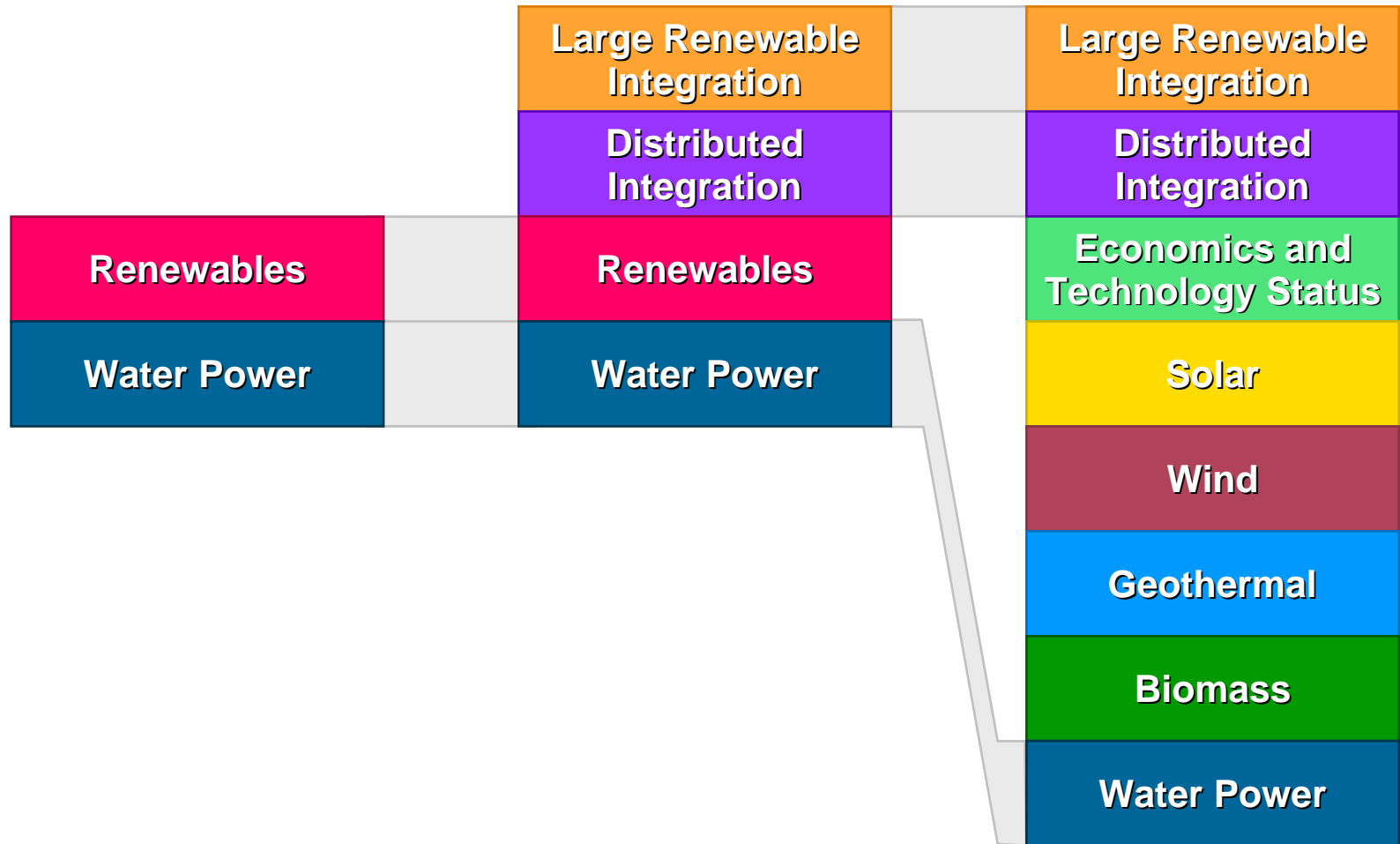
Wind + CT Operating Parameters



EPRI's Role as Technology Accelerator



EPRI Renewables Activities Expanding



2008

2009

2010

Together...Shaping the Future of Electricity