

If Not Gas Then...



The Renewable Solution



LNG vs. Renewables

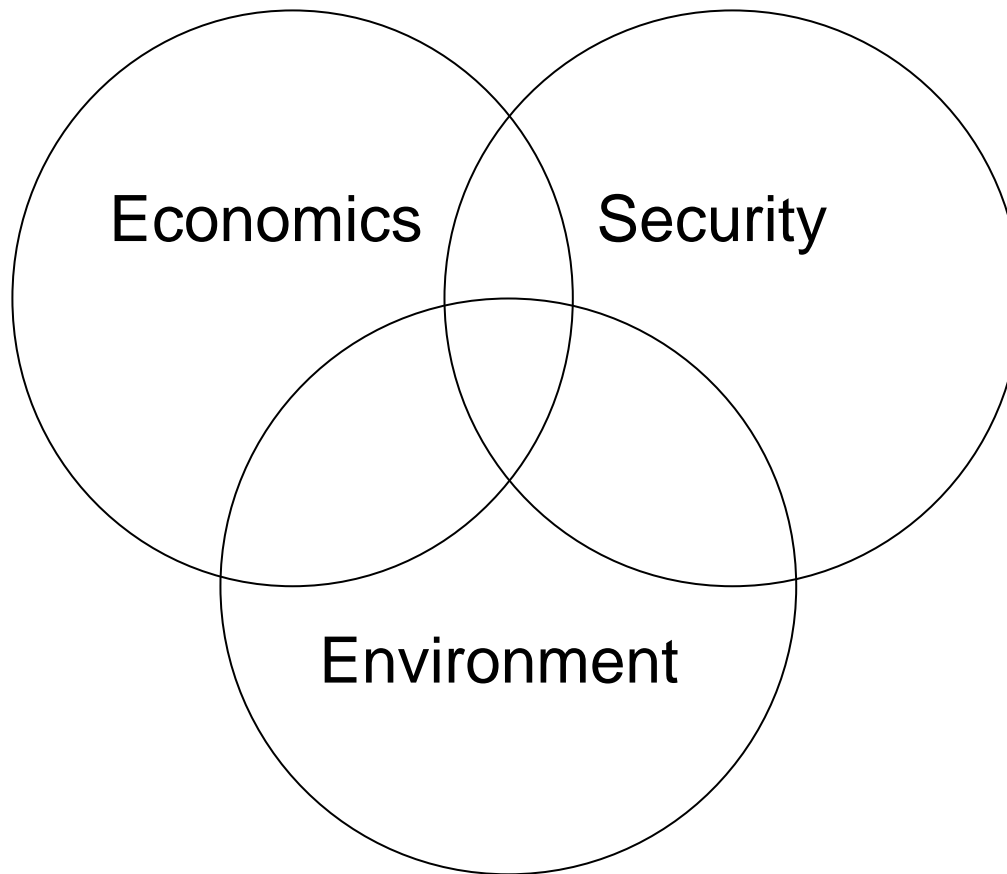
- LNG

- 5 tcf shortfall met with LNG imports.
- Annual cost of \$50 billion.
- Twenty year NPV of \$425 billion.
- Major security concerns.

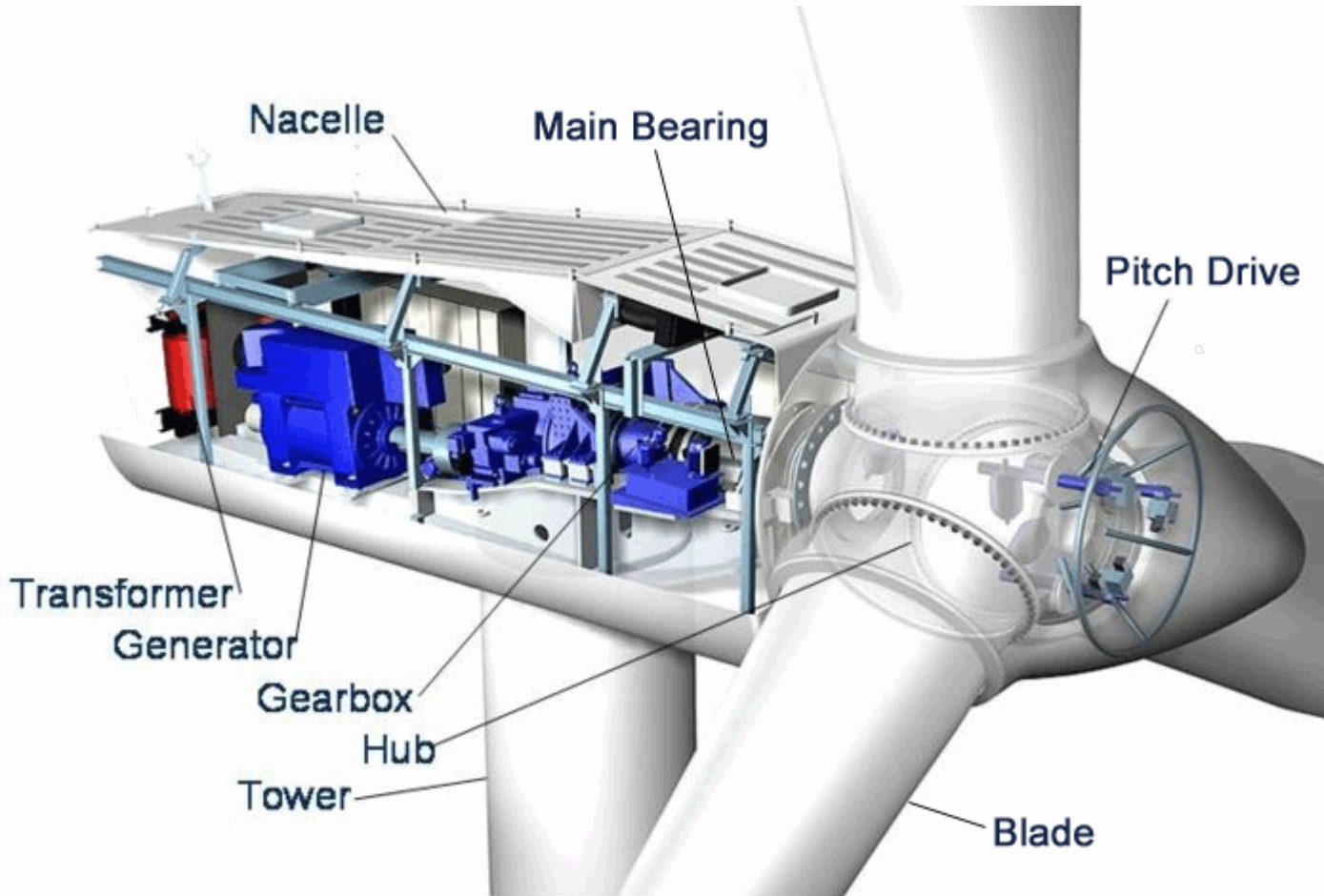
- Renewables

- 150,000 to 200,000 MW of renewables.
- Total investment of \$200 to \$300 billion.
- SO_x, NO_x, particulates, mercury and CO₂ benefits.

Policy Goals



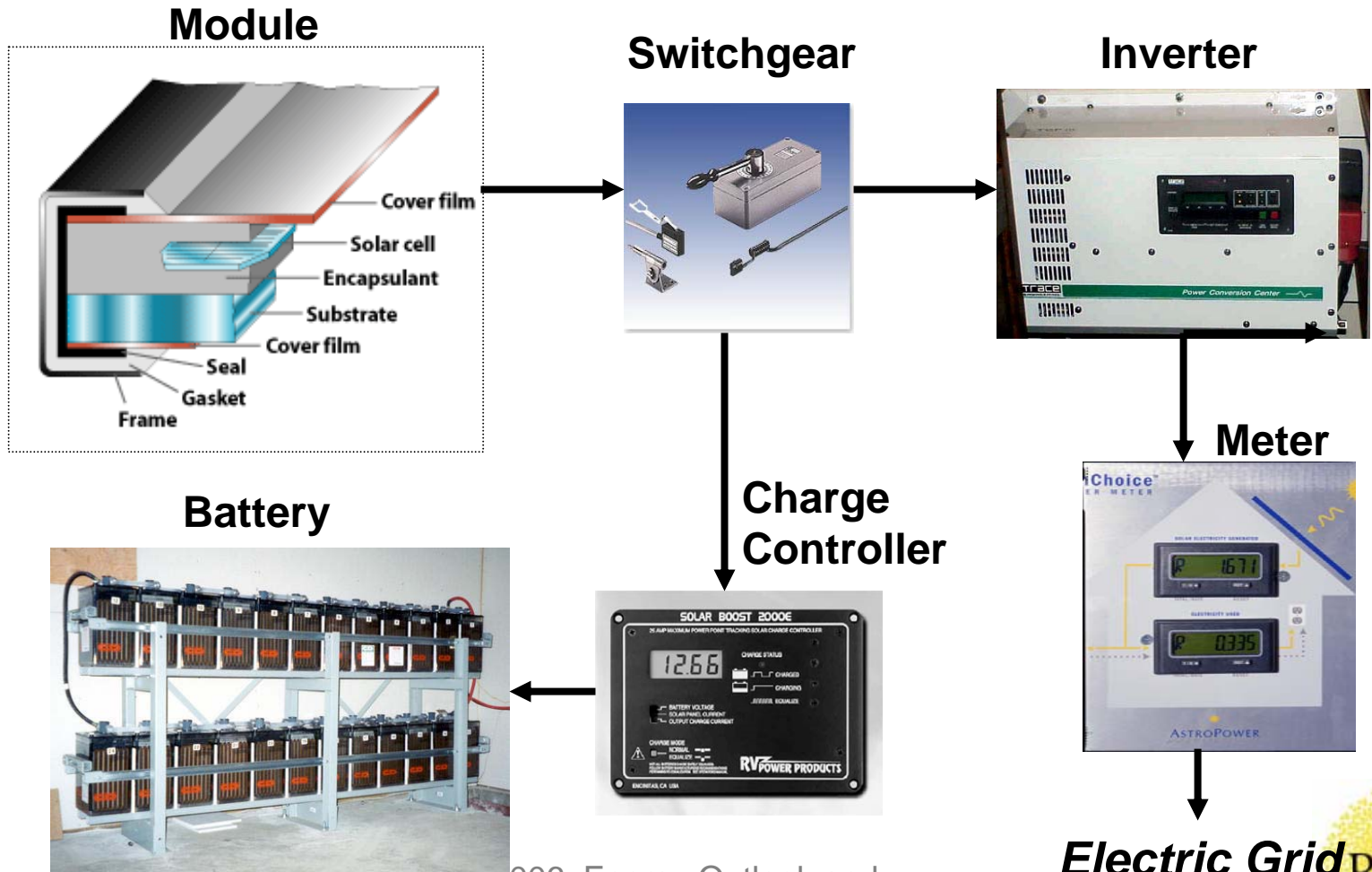
Wind



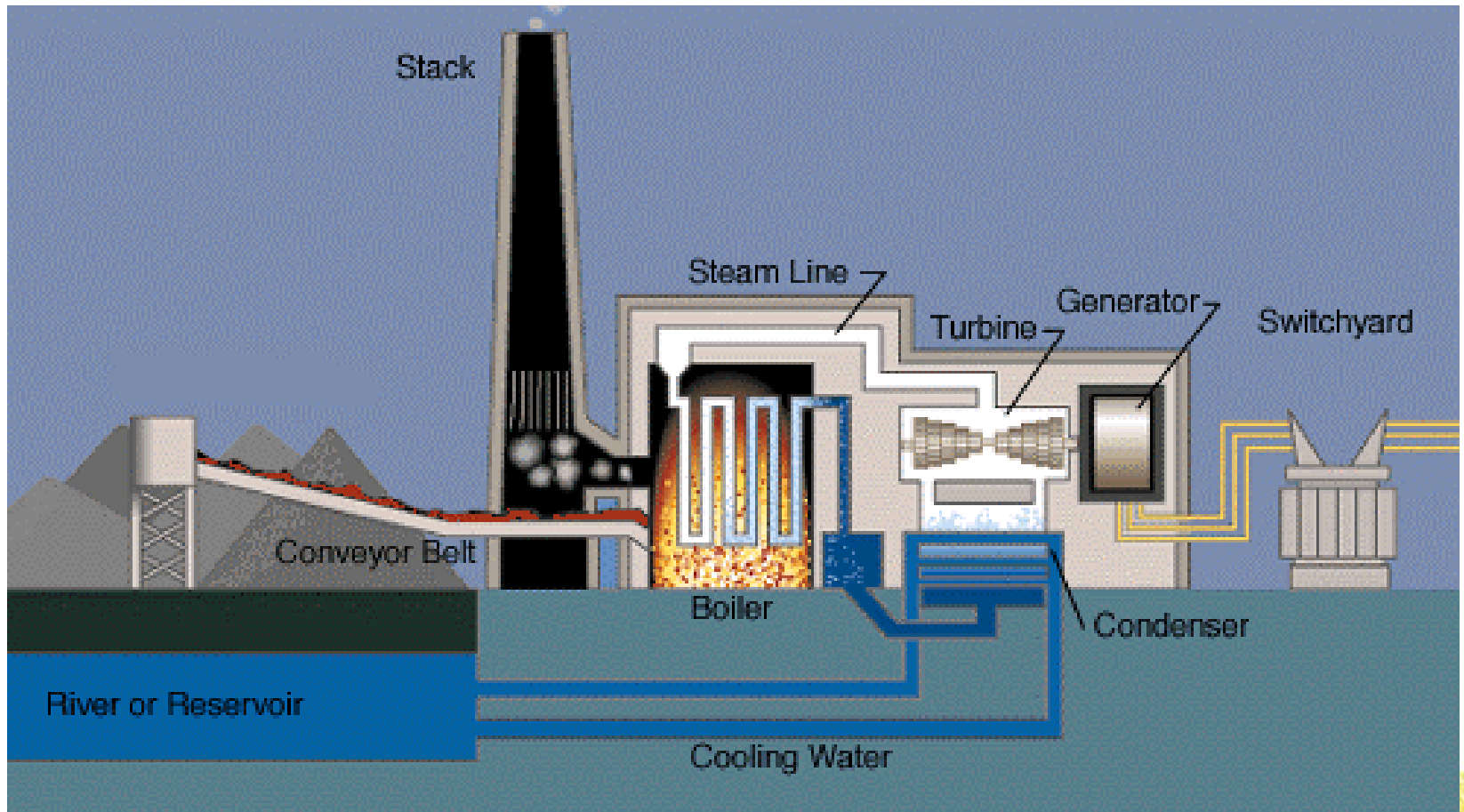
EIA 2006: Energy Outlook and
Modelling Conference



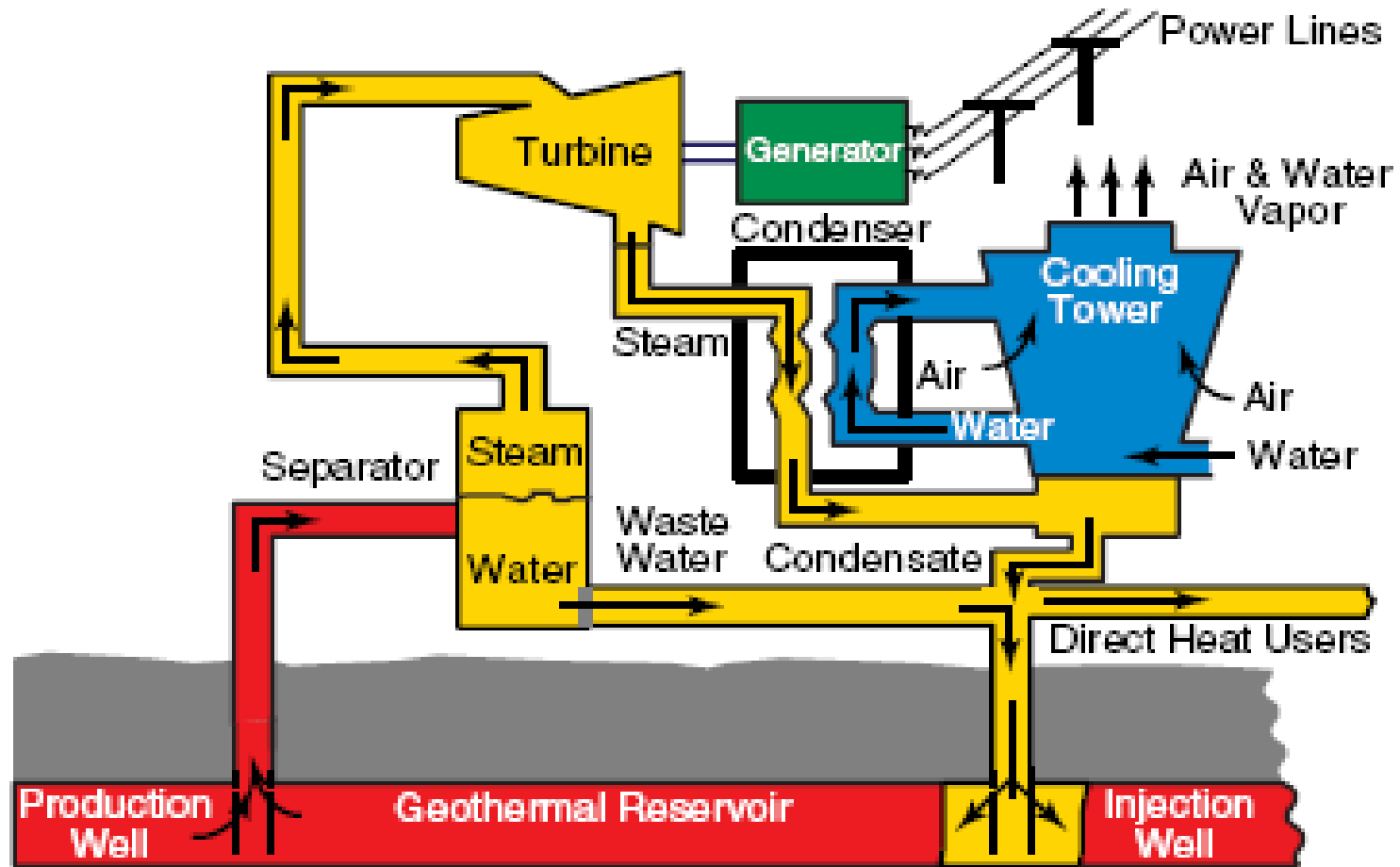
Photovoltaics



Biomass



Geothermal



Security Exposure

- Catastrophic, e.g. explosions at nuclear or LNG plants.
- Fragility, e.g. allowing the electric grid to depend on long, vulnerable transmission lines.
- Dependency, e.g. relying on oil and natural gas imports from OPEC.

Security Evaluation

- Create an authority similar to the Council on Environmental Quality that applies the National Environmental Policy Act.
- NEPA asks: is this action necessary and is it done so as to minimize the damage to the environment.

Environmental Prudence

- Climate change concerns require policy to stabilize CO₂ emissions from electricity generation and transportation.

Stabilization Wedges

- Annual world wide carbon emissions are 7 billion tons, growing at 1.5% or 105 million tons.
- A “wedge” is 1/7ths of the annual increase or 15 million tons.
- US responsibility is for two wedges, one for electricity one for transportation.

Electric Sector Wedge

- 18,000 MW of new renewable projects each year will stabilize the emissions from the US electric sector if the renewable energy backs-out coal generation.

Basic Roles and Policy Principles: Public Values

- Security and environmental prudence are public values.
- The Public role is to provide incentives to engage the best possible private initiative to achieve these goals.

Basic Roles and Policy Principles: Private Initiative

- Private effort is needed at every stage, from basic science, to research and development, to R,D&D, to efficient commercial operation.

Basic Roles and Policy Principles: Organizing

- Set a public return of \$50 for every ton of carbon avoided provided that:
 - all actions to pass the economic, security, and environmental standards simultaneously.
 - Use creative measures to deliver this benefit, such as “full faith and credit” backing of Treasury for projects.

What Would This Look Like

- Every kWh of carbon free, secure, economic generation would receive a return of \$.013 per kWh.
- This would add 18,500 MW per year and would provide \$17 billion in new investment.
- Jobs in installation and O&M would increase 54,000 and over 70,000 existing manufacturing firms could make component parts,