

*The Brattle Group*

*Meeting Today's Energy Challenges*

**Integrated Resource Planning – An Overview  
Public Meeting for Entergy New Orleans**

**Robert Earle, PhD  
19 November 2008**

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# Context: Where does power come from?

## **For the United States as a whole (2005 figures)**

- Coal was used to generate 49.7% of electricity
- Nuclear generating units were the second largest contributor at 19.3%
- Natural gas was used to generate 18.7%
- Petroleum generated 3.0% of electricity.
- Of all renewables, hydro had the largest share at 6.5%
- With non-water renewables equal to about 2.7%. (includes geothermal, refuse, waste heat, waste steam, solar, wind, wood, etc.)

## **Louisiana had about 58% generated from utilities and 42% from independent power producers and cogeneration**

- Natural gas dominates as the primary fuel used for electricity at 75%
- Coal was used to generate 12.9%
- Nuclear was used to generate 7.9%
- Petroleum 1.1%
- Hydroelectric 0.7%
- Other Renewables 1.2%



# Why is planning needed?

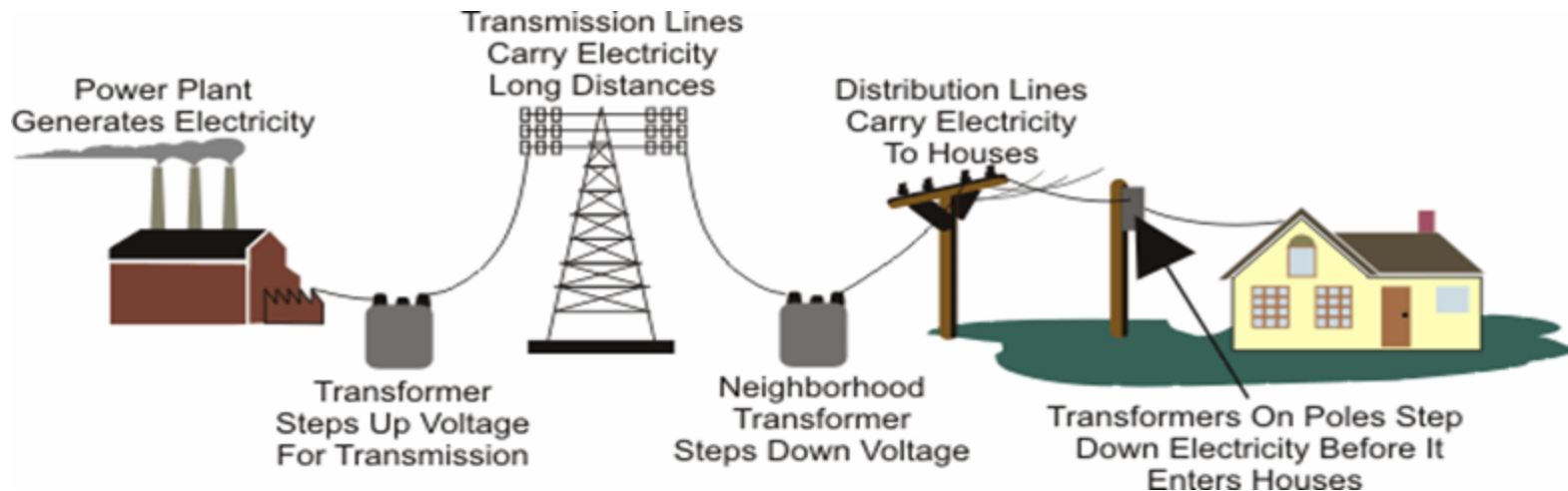
**In order to provide service, utilities must make on-going infrastructure investments in a variety of resources such as**

- ◆ **Distribution facilities**
  - Switches and meters at the house or business
  - Poles and wires to the house or business
  - Other equipment such as transformers or substations
- ◆ **Transmission facilities**
  - The “bigger wires” that move power from power plants to consumers
- ◆ **Facilities that moderate the demand for power**
  - Energy efficiency
  - Demand response
- ◆ **Renewable generation (wind, solar, biomass, etc.)**
- ◆ **Conventional generation (coal, nuclear, natural gas, etc.)**

# Why is planning needed? (continued)

**Many of these facilities require a high level of investment and last for many years (20 to 40, and beyond) – impacts on electricity prices for years**

- Significant coordination is needed in order to conserve resources, preserve reliability, and moderate costs

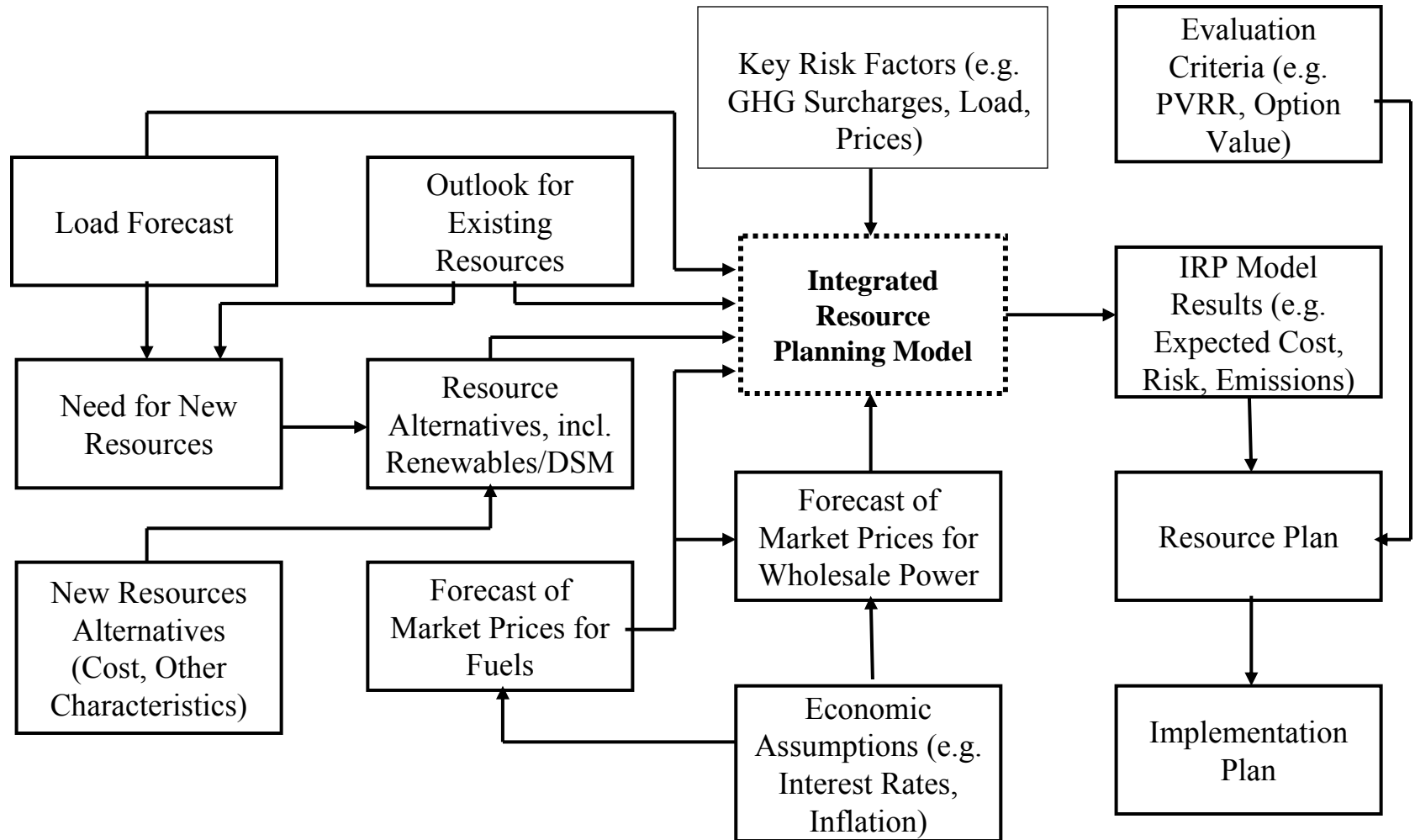


# Integrated Resource Planning (IRP) – what is it?

## IRP is two things

- ◆ A process
  - *Integrate* the viewpoints of the stakeholders
    - Consumers: household, commercial, industrial
    - Environmental community
    - Business community
    - Others
  - Resolve issues such as
    - What are the goals of the planning process?
    - What is the right approach to evaluate alternatives?
  
- ◆ An analytic approach
  - *Evaluate and integrate* all viable options and elements in order to provide reliable service at least cost
  - Distribution, transmission, conventional generation and renewables, as well as demand side options should be considered for their ability to affordably and reliably serve consumers' demand for energy
  - Develop least cost plan

# IRP – the analytical aspect



## **Jurisdictions differ in exactly how they approach the IRP process, however**

- ◆ Consideration of all stakeholder viewpoints is key
- ◆ Typically multiple meetings are held to resolve key issues
  - Sometimes these are formal and take the form of hearings
  - Sometimes these are more informal and take the form of technical conferences
  - In either case, to the extent practicable, differing viewpoints are given a chance to express their point of view
- ◆ The process can only succeed if there is active participation

# IRP – what's old is new

## IRP is not new

- ◆ Early reference from 1898
- ◆ The idea gained vogue with new analytic techniques and models in the 1960's
- ◆ With the oil shocks of the 1970's and increasing construction costs in the electricity industry through the 1980's, alternatives to conventional supply became important and focus on integrating came to the fore
- ◆ However, the focus on competition in the 1990's evaporated much of the interest in IRP until recently
  - Competition in generation supply has not seemed to solve all the problems

# IRP – the new challenges

**Competition on the generation side is a reality that won't likely disappear, but uncertainties abound:**

- ◆ Fuel prices are more volatile
- ◆ Construction costs greatly increased in the past few years
- ◆ Climate change restrictions loom – but the severity they will take and time of implementation is uncertain
- ◆ Effect of the economy on consumption (and the effect of consumption on the economy)
- ◆ The potential of new technology such as Smart Meters/Smart Grid to help change the equation

# Conclusions

## **Energy infrastructure is complex, long-lived and necessarily, expensive**

- ◆ Utilities must strive for a balanced portfolio of options appropriate to their circumstance, location and available resources – e.g., TX has more wind resources than LA but you have one of the largest natural gas supplies in the world

## **IRP is a way to balance interests and needs, helping to rationalize options and manage demand**

- ◆ Interest in IRP is up, due to efforts to curb greenhouse gases, the general need for new generation and the cost of conventional resources
- ◆ Role of the players:
  - Stakeholders must be counted on to represent their own unique interests
  - Regulators must balance these interests, and sanction a plan that integrates these resources at the lowest cost possible.
  - It's a tough job!

**Everyone -- citizens, businesses, and public officials have a stake in this process, and I encourage you to lend a hand and make your voice heard, because these decisions will ultimately affect you**