

**SIEMENS**



**Meeting our Energy  
Challenges  
through  
On-Site Clean Energy  
Generation**

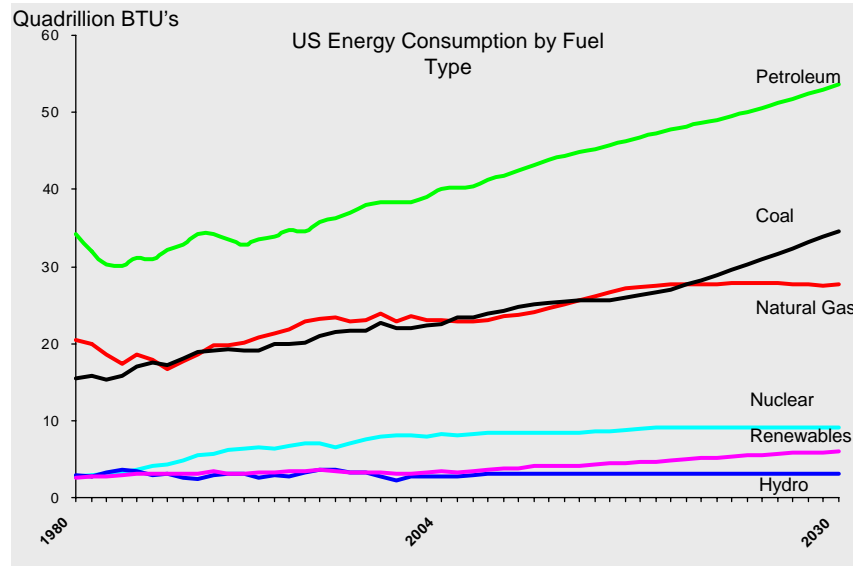
**Siemens Building Technologies**

**April 2007**

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- ❑ Facing Global Energy Challenges
- ❑ Siemens Building Technologies;  
*On-site Clean Energy Generation*
- ❑ Siemens Wind Power

## Facing Global Energy Challenges



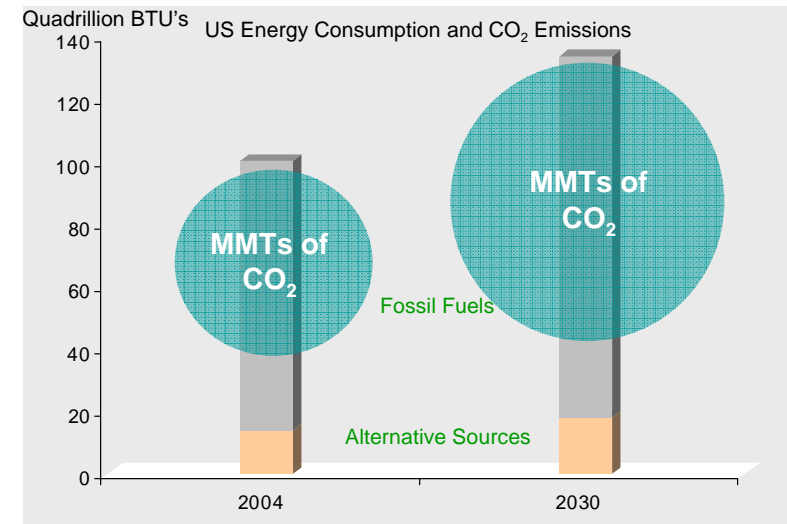
### What we Know Today....

- Increased demand for fossil fuels
- Global fossil fuel production will peak
- Our nations facilities are aging and inefficient
- Energy prices are rising and volatile
- Strained energy infrastructure and delivery system

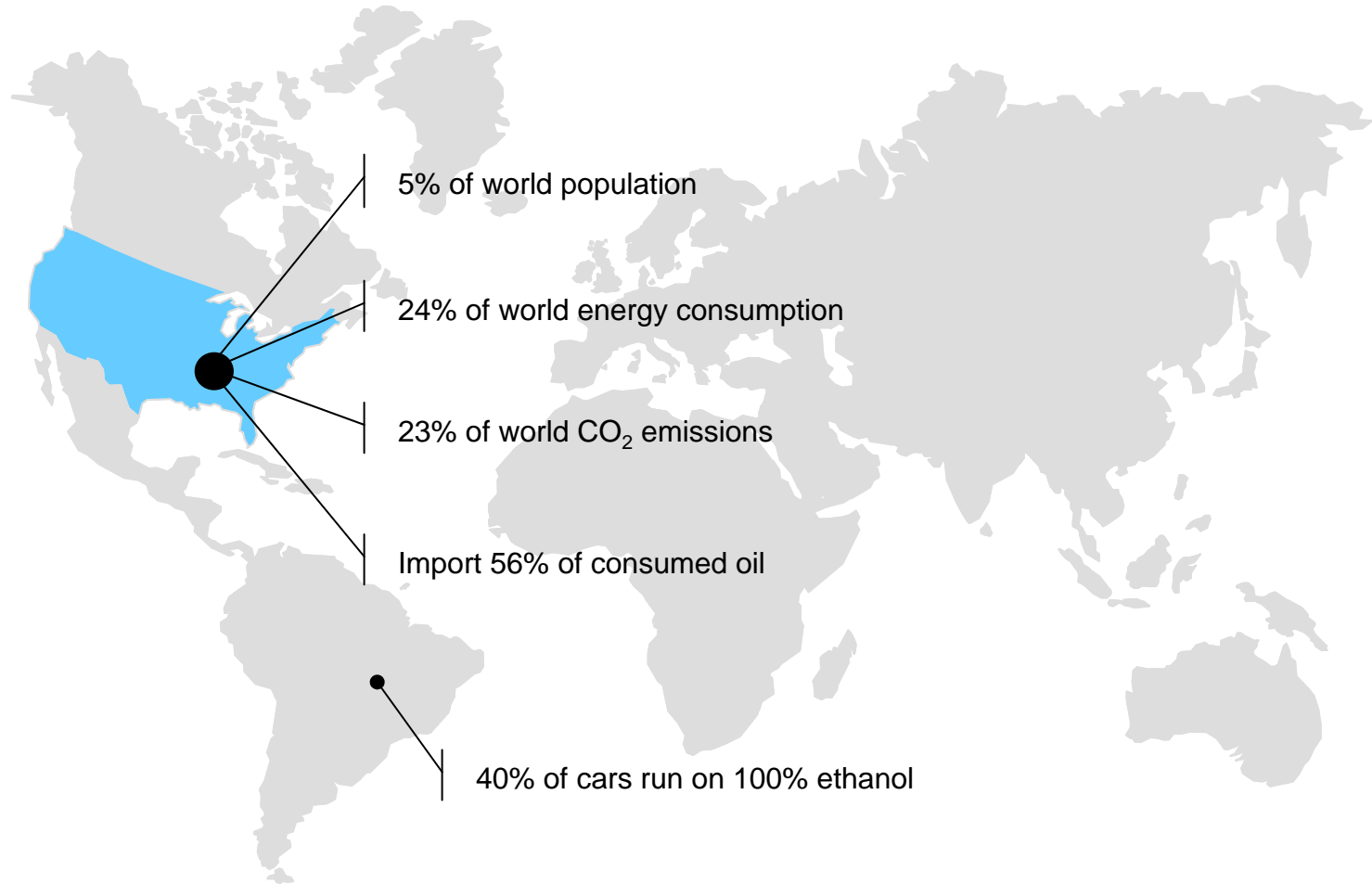
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### Impacts our World of Tomorrow....

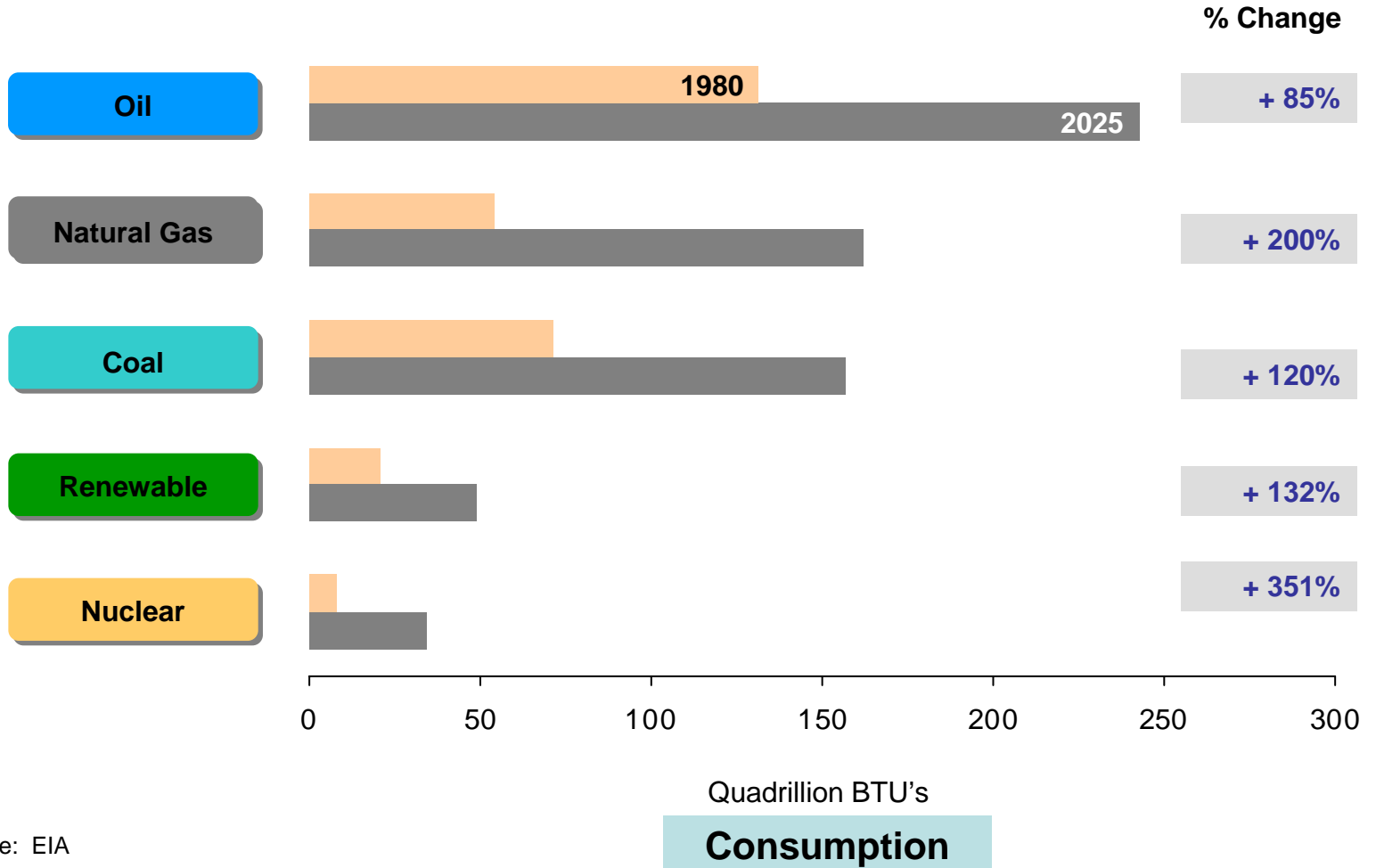
- Increased global competition for scarce resources
- The US produces ¼ of the world's CO<sub>2</sub> emissions
- Cheap, plentiful energy supply is a thing of the past.
- A reliable and secure energy supply is a national security issue



## Facing Global Energy Challenges



## Facing Global Energy Challenges



## What is the Answer to our Global Energy Issues

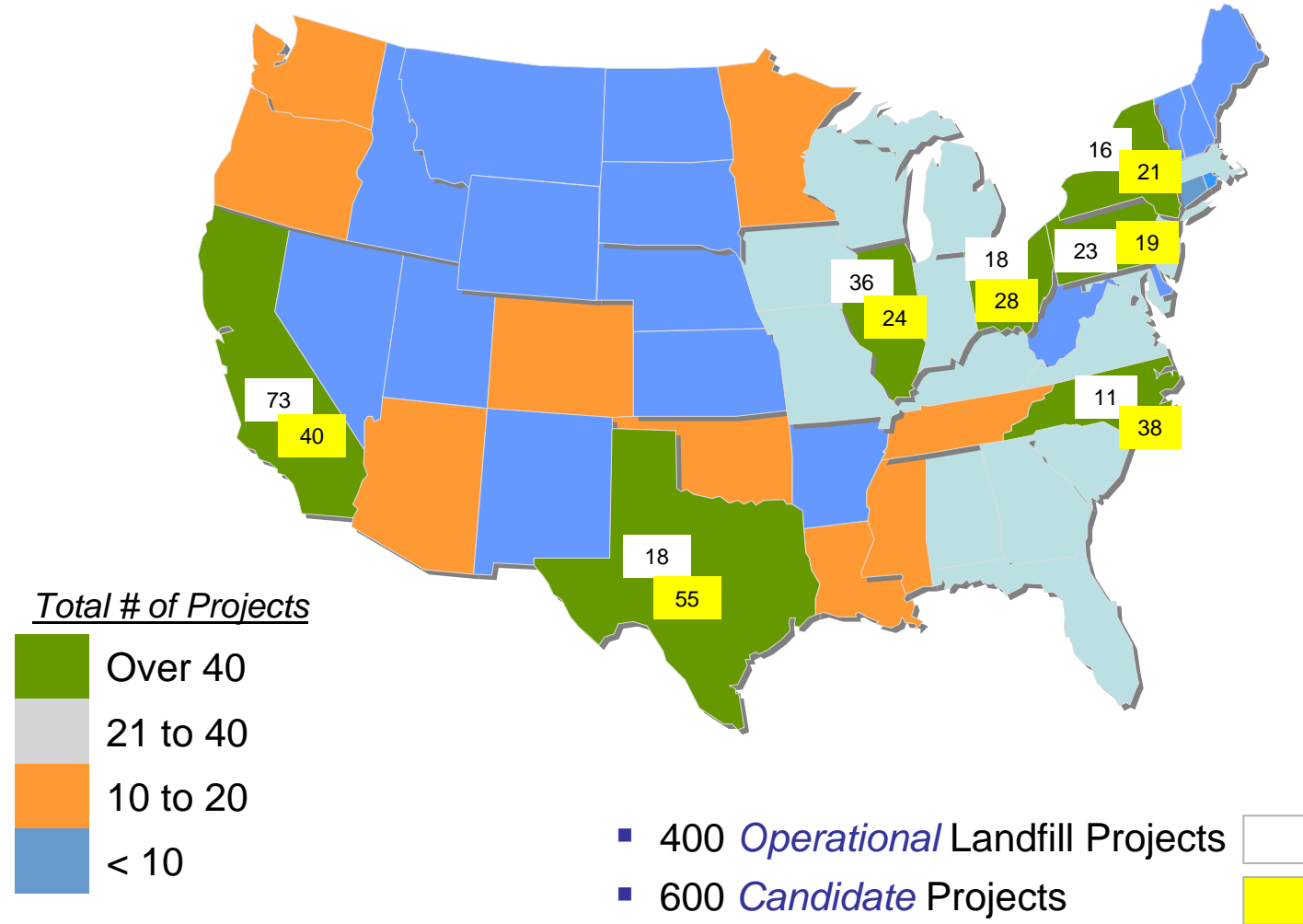
- There is no single solution today
- Efficiency: use less
- Alternative and Renewable Sources
  - Biomass, Waste to Energy, Landfill Gas, Wind, Solar, Ethanol, Bio Diesel, and others
- Get started now by implementing lowest cost alternatives one project at a time

## Siemens is Meeting these Challenges

- **Onsite Clean Energy**
  - Landfill Gas, Carpet Waste and other Waste to Energy Sources
  - These projects are typically smaller steam projects and 5-20 MW electric projects due to fuel limitations
- **Energy Efficiency**
  - Lighting, HVAC, ect. Old and boring but it works.
- **Wind Energy**
- **Balance** goals for environmental initiatives with financial impact & budgetary constraints

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## Landfill Gas to Energy Projects – Operational + Candidate



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## Landfill Gas to Energy

**There are many ways to convert landfill gas into useful energy**

- Electricity generation
- Direct Use Projects such as boiler fuels, asphalt plants, and lime kilns
- Siemens is currently implementing 4 projects
- Three Rivers SWA direct use project serving Kimberly Clark
- Manatee County Florida 5.7 MW electric plant
- Nassau County Florida 5.7 MW electric plant
- Baton Rouge direct use project

## Benefits of Landfill Gas to Energy

### **Communities that turn their landfill gas into energy are enjoying these benefits:**

- **Economic:**
  - Fuel cost savings
  - Reduced operating expenses
  - Job creation related to project
  - Improved economic development near the landfill
- **Environmental:**
  - Improved local air quality
  - Reduced greenhouse gas emissions
- **Energy:**
  - A reliable local fuel source
  - Less need for polluting fossil fuels

## Case Study: Clean on-site Energy Generation

Client: **Shaw Industries**

Building: **Dalton Manufacturing Facility (Dalton, GA)**

Client objective:

- Reduce amount of carpet and flooring from the manufacturing process going in to landfill
- Provide a secure, reliable and environmentally friendly energy supply for it's manufacturing operations

Siemens solution:

- Innovative waste-to-energy solution utilizing an existing stream to provide on-site energy generation
- Gasification process to convert 24 million pounds of carpet and 12 million pounds of wood flour converted annually into steam

Client results:

- Provides 2/3 of plant's total energy needs
- Displace nearly 2 million gallons of fuel per year
- Estimated energy savings of \$2.5 million per year
- Cleaner emissions than traditional power sources – coal or fuel oil



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## Wind Energy

- Cost effective and largest economically attractive renewable source
- Siemens manufactures worlds largest wind turbine at 3.6 MW



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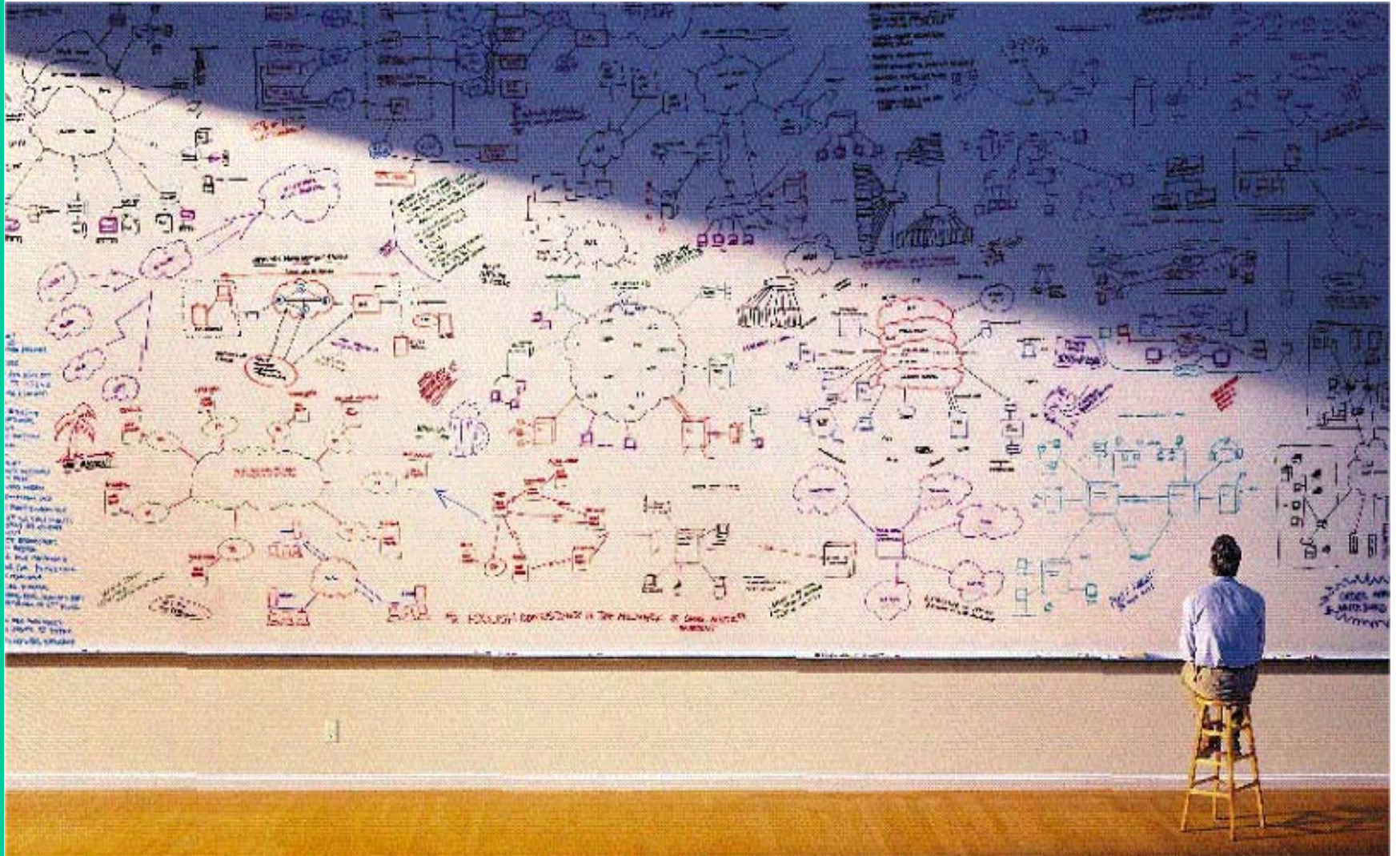
## King Mountain Texas Wind Farm

- 214 Turbines
- 278 MW



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