

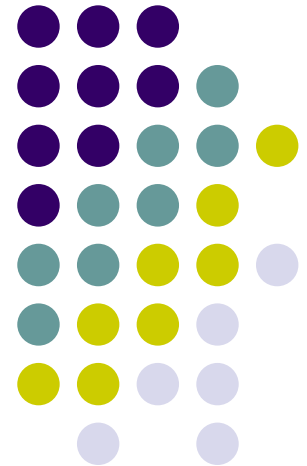


# Renewable Power\*



Ramesh (“Rudy”) Shankar  
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*Solving Tomorrow’s Energy Problems Today™*

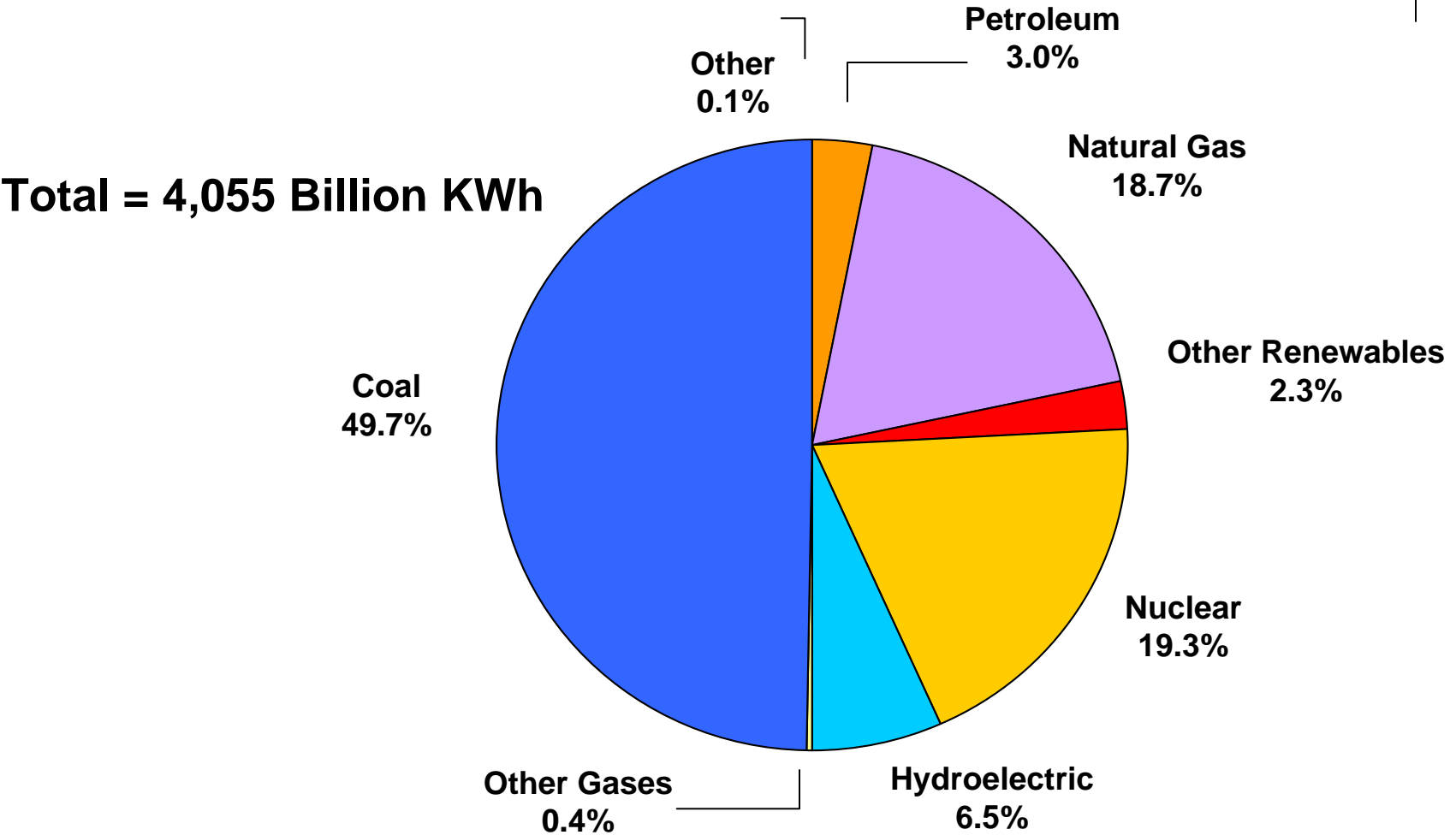
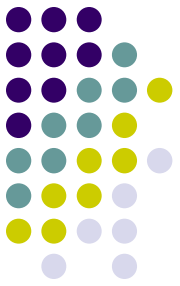


[www.signatechsystems.com](http://www.signatechsystems.com)

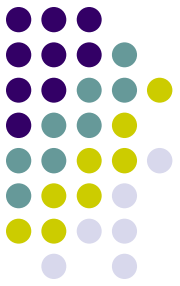
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\* Signatech Systems acknowledges that portions of this presentation were made available through the kind auspices of Blair Swezey, NREL

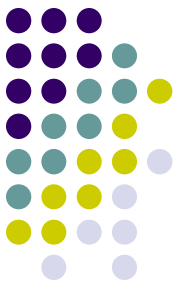
# U.S. Generation Mix in 2005



# What is Driving State Renewables Policies?

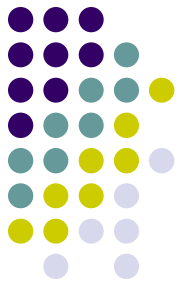


- **“Cleaner” energy production**
- **No or low water consumption (for some RE)**
- **Waste reduction**
- **Fixed, predictable costs**
- **Use of local or in-state resources**
- **Local and statewide economic benefits**
- **Can be deployed in various system sizes**
  - Utility-scale
  - Farms and ranches
  - Businesses
  - Homes

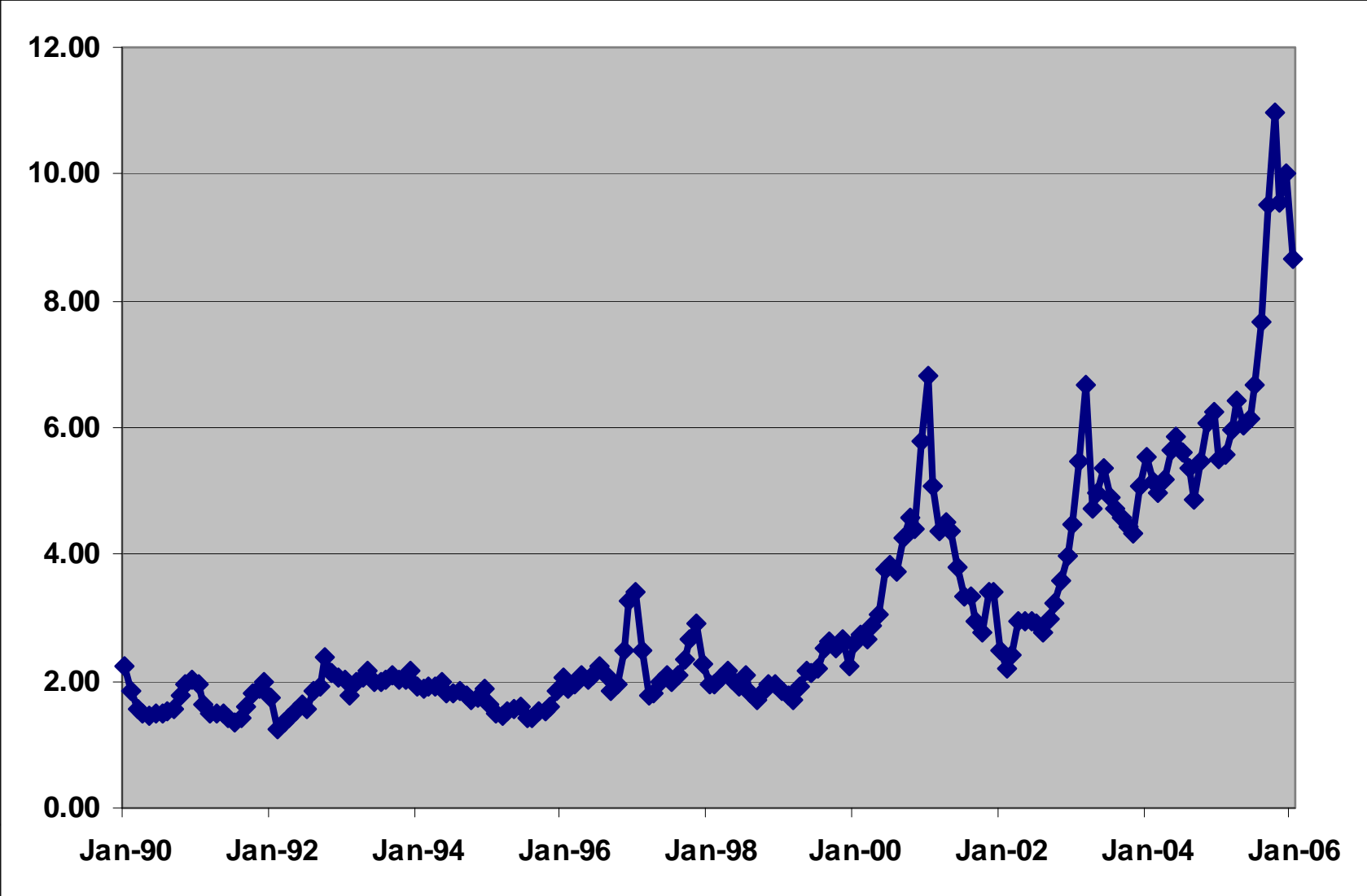


# What are the Issues?

- ***Cost competitiveness***
  - Higher initial cost hurdle
- ***Resource availability***
  - Nationally abundant
  - Regionally/locally specific
- ***Technology maturity***
  - Technologies available, but continue to evolve
  - “Newness” involves investment risk, both real and perceived
- ***Resource “variability”***
  - Some renewable energy technologies do not act like conventional technologies

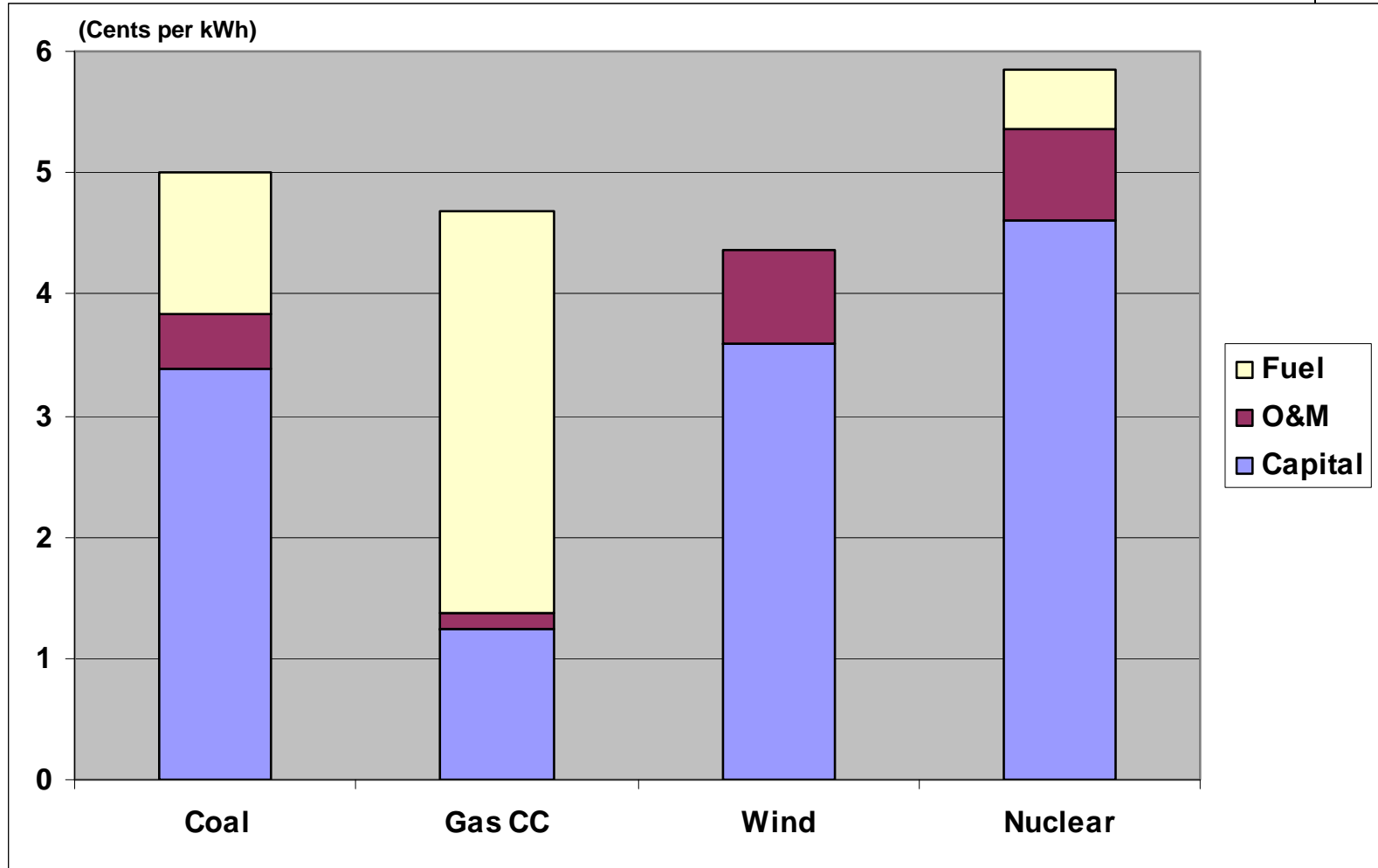
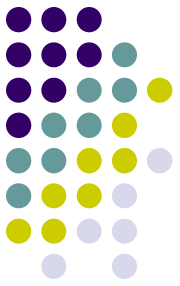


# U.S. Natural Gas Price Trend



# Levelized Electricity Costs for New Plants in 2010

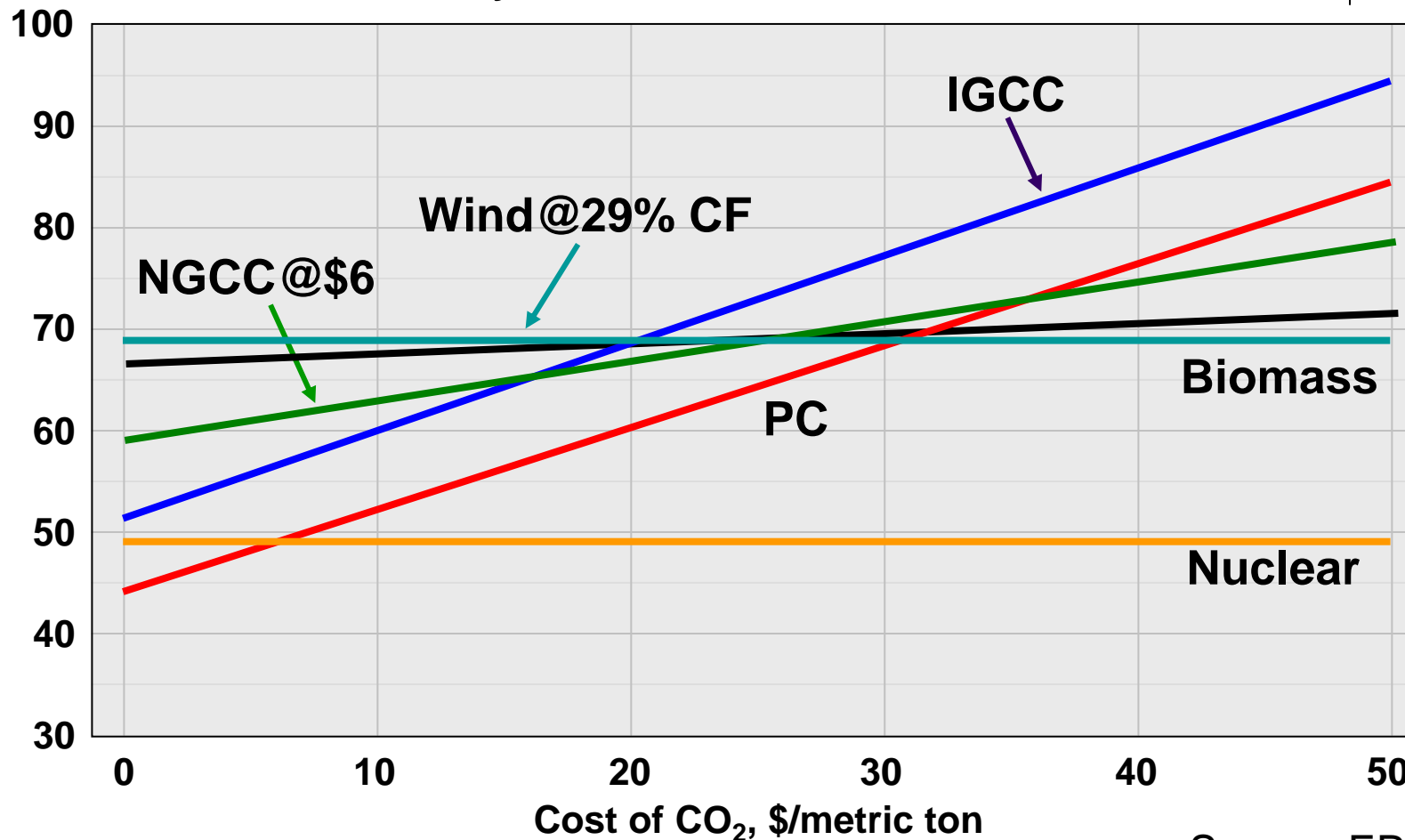
(U.S. Energy Information Administration)



# Technologies for New Generation in 2010-2015



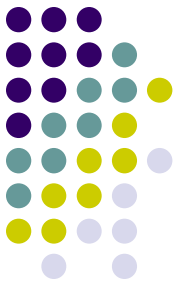
Levelized Cost of Electricity, \$/MWh



Source: EPRI

# Top 20 U.S. Green Power Purchasers

(as of July 2007)



1. PepsiCo (1.11 TWh)
2. Wells Fargo & Company(0.55 TWh)
3. Whole Foods Market (0.51)
4. The Pepsi Bottling Group (0.46)
5. U.S. Air Force (0.46)
6. Johnson & Johnson (0.40)
7. U.S. Environmental Protection Agency (0.33)
8. Kohl's Department Store (0.20)
9. Los Angeles County Sanitation Districts (0.196)
10. Starbucks (0.185)
11. DuPont Company (0.180)
12. U.S. Department of Energy (0.158)
13. PepsiAmericas, Inc. (0.157)
14. Vail Resorts (0.152)
15. Cisco Systems (0.128)
16. HSBC North America (0.125)
17. Staples (0.122)
18. New York University (0.119)
19. The World Bank Group (0.115)
20. University of Pennsylvania (0.112)

**Total : 6.2 TWh, 60% of Green  
Power purchased**