

# Overview of the Renewable Energy Cost of Generation Study

April 16, 2009

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# Process Forward

- Overview of research study scope
- Presentation of draft results by consultant
- Questions & comments in workshop
- Written comment period of one week
- Final results prepared



# Scope of Research Tasks & Schedule

*Review Results for Tasks 1 - 4 Today:*

1. Identify commercial renewable energy (RE) technologies in CA, & their scales of deployment
2. Identify market & industry changes affecting costs, current trends, & cost drivers for each technology
3. Provide current costs w. max. and min. costs for recommended technologies
4. Create model to estimate future costs using current costs & cost drivers



## Scope of Research Tasks & Schedule – cont.

- Draft Results for Tasks 5 - 6 Ready in June:
  5. Reconcile prices and costs for utility-scale power purchases considering factors other than cost in pricing
  6. Estimate costs and cost trends for community & building-scale generation technologies, & explain cost variations
- Final Results for Tasks 1- 6 Ready in August

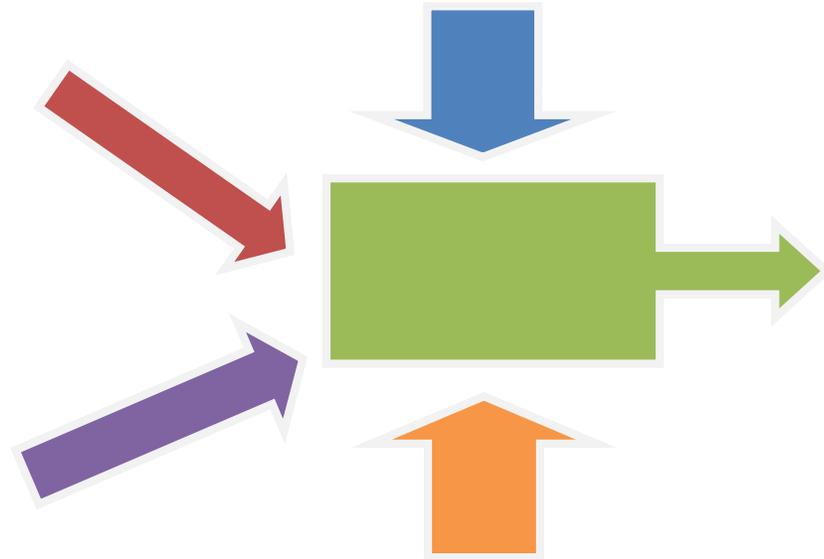
# 1. Commercial Technologies



- Review previous key studies on RE costs in CA
- Recommend RE technologies by scale for detailed analysis:
  - **Utility** scale (>20MW): draft results today
  - **Community** scale (1-20MW), and **building** scale (<1MW): draft results in June
- Identify primary commercial embodiment of each technology currently, and expected in 2018
  - Include nuclear and integrated gasification combined cycle (IGCC) as other low-Carbon generation

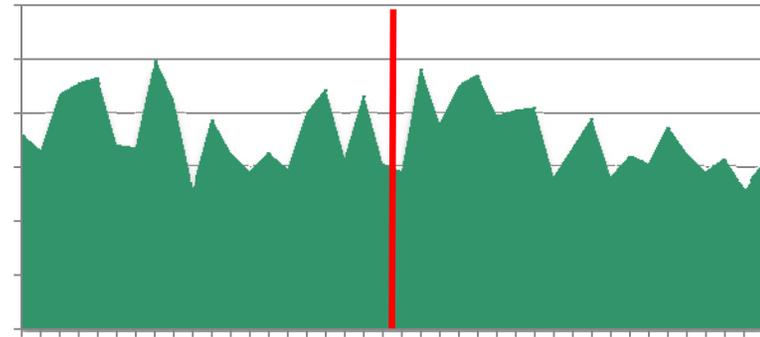


## 2. Cost Drivers



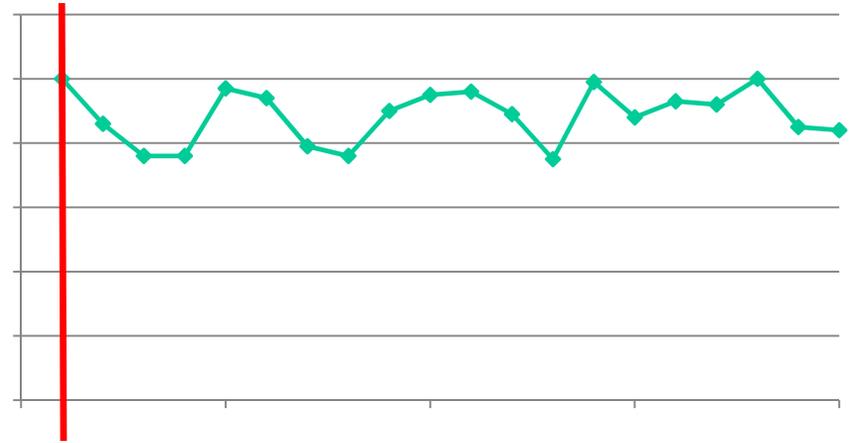
- Identify market and industry changes since 2007 COG study
- Identify trends that will affect future costs
- Identify specific cost drivers for each RE technology, e.g. plant scale

## 3. Current Costs



- Provide 2008 costs for recommended utility-scale RE technologies, nuclear, and IGCC
- Provide input formatted for CEC's COG model of technologies significant in CA
- Provide maximum and minimum costs for recommended technologies
  - Maximum: A cost  $>1$  competitive market player would pay
  - Minimum: The least cost recorded for commercially representative projects

## 4. Cost Trajectories



- Develop a model using cost driver information to estimate future cost trajectories for 2009 through 2029 for utility-scale technologies
- Apply the model to current costs

# Subject of Review Today

- Generation by RE, nuclear and IGCC
- Deployment at utility scale
- Current and future costs through 2029
- Inputs to CEC's COG model
- Results are applicable to broader energy planning & policy-making in CA

# To Comment



- Comments on the workshop topics accepted until **5:00 p.m., April 23, 2009**. Include number # 09-IEP-1E. Indicate "Present and Future Central Station Renewable Plant Costs" in the subject line or first paragraph.
- If hand delivered, deliver an original to:  
California Energy Commission  
Dockets Office, MS-4  
Re: Docket No. # 09-IEP-1E  
1516 Ninth Street  
Sacramento, CA 95814-5512
- To comment by e-mail: Include your name or organization's name in file name. Provide e-comments in either Microsoft Word or PDF format to **docket@energy.state.ca.us**. Also send one paper copy to the Dockets Office.

## *On to the Draft Results by KEMA*

- Energy services & consulting firm
- Subsidiary of KEMA NV of the Netherlands
- 350 US staff
- Expertise in energy markets, distribution & transmission, RE, distributed energy, & energy efficiency
- 30 years energy experience in US

