EnergyFactsWeekly
From Energy-Facts.org
Commentary and Research
From Dr. Frank Clemente

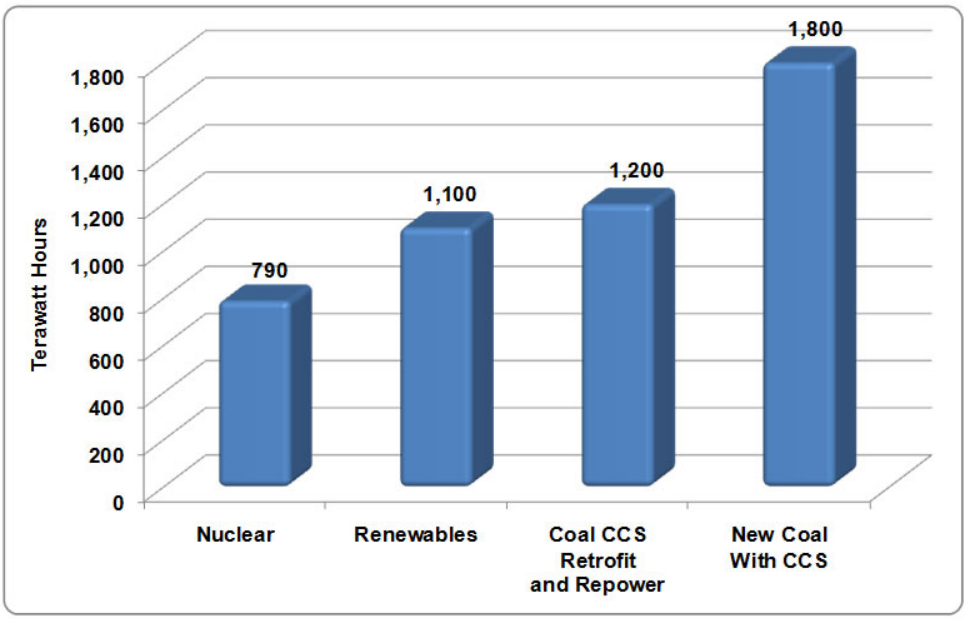
Week of January 11, 2010

Low-Carbon Coal: 21st Century Technologies Open the Door

> **"In combination, the entire existing coal power fleet could be replaced by CCS coal power ... 10 GW of demonstration fossil-fuel CCS plants could be operating by 2020 ... With similar assumptions, 5 GW per year could be added between 2020 and 2025, and a further 10–20 GW per year from 2025 ..."**
> — National Academy of Sciences [1]

Coal provides more than 50% of America's electricity and is increasingly recognized as the key to meeting the unprecedented and continuing rise in global energy demand. Coal with carbon capture and storage (CCS) will be the pathway to meeting climate change policies while sustaining economic growth.

Potential New Electricity Supply from Various Sources [1]



In 2009, Energy Secretary Chu laid out an aggressive timeline to have up to 10 commercial-scale CCS demonstration projects in operation by 2016 and to begin widespread and affordable deployment of CCS within 8 to 10 years. Earlier in the year, the National Academy of Sciences (NAS) had indicated that over the next several decades, coal-based generation with CCS can replace the existing coal fleet and provide up to 3,000 Terawatt-hours (TWh) of electricity per year at affordable rates [1]. The U.S. now uses about 4,100 TWh from all sources.

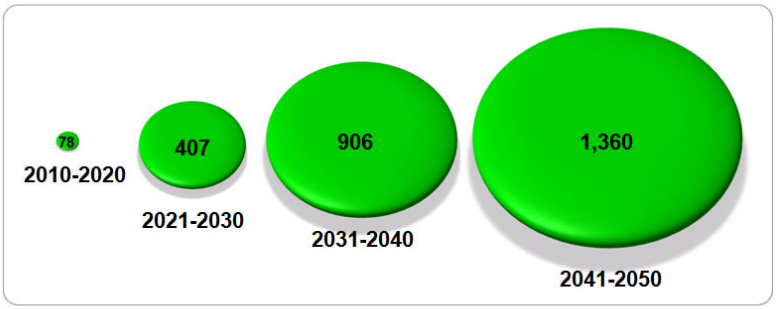
(Continued on reverse)

(Continued from front)

And, in a study requested by Sec. Chu, the National Coal Council, an advisory body to DOE, found that following the scenario developed by the NAS -- the construction of about 360 gigawatts (GW) of coal-based generation with CCS by 2050 -- will open up a new horizon for clean and sustainable energy at reasonable cost. Such a construction program will revitalize the industrial sector of America, provide over 28 million job-years spanning four decades and increase our nation's Gross Domestic Product by more than $2.7 trillion -- a remarkable payoff for a $1.2 trillion investment [2].

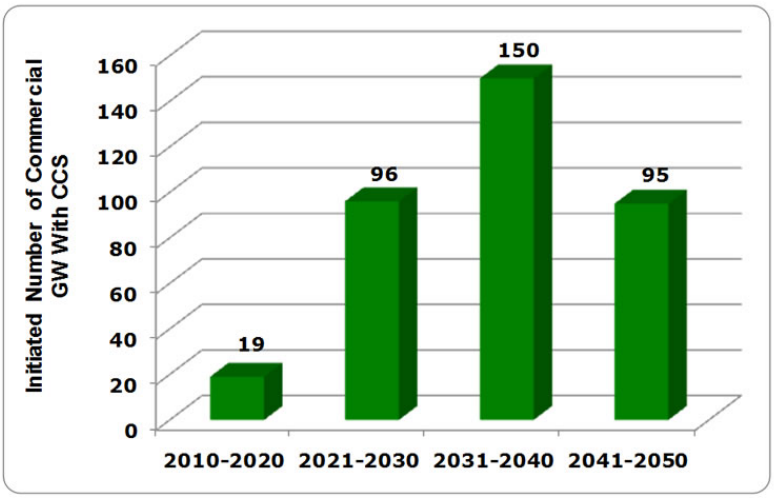
Research conducted for the AFL-CIO (2009) indicates operation and maintenance of these facilities will support over 800,000 permanent jobs throughout the economy--- thereby benefiting generations of Americans yet to come [3]

GDP Increases Will Benefit Generations of Americans [2]



Value Added in Billions of Dollars

Commercial Coal-based Generation with CCS Initiated by Decade (GW)



"We conclude that CO2 capture and sequestration (CCS) is the critical enabling technology that would reduce CO2 emissions significantly while also allowing coal to meet the world's pressing energy needs."

-- Massachusetts Institute of Technology [4]

References:

[1] National Academy of Sciences, America's Energy Future, 2009
[2] National Coal Council, Low-Carbon Coal: Meeting U.S. Energy, Employment and CO2 Emission Goals with 21st Century Technologies, 2009
[3] RBC Consulting, AFL-CIO "Employment and other economic benefits from advanced coal electric generation with carbon capture and storage," 2009
[4] Massachusetts Institute of Technology, The Future of Coal, 2007

About Frank Clemente, Ph.D.

Dr. Clemente is a Professor at Penn State University where he specializes in research on the socioeconomic aspects of energy policy. His work has appeared in *World Oil*, *Public Utilities Fortnightly*, *Oil and Gas Journal* and a variety of other energy related media. *The materials presented here are solely the responsibility of the author and do not represent Pennsylvania State University in any manner.*