



Intro Energy Finance Course

July 31 – August 1, 2012
Washington, DC



Brian C. Yerger, CFA

Alternative Energy Industry Analyst

Energy Consultant and Project Financier

- Public and private energy project feasibility studies
- RFP Management
- Project Development and Financing
- Policy Advisor for governmental agencies

Acronyms

Frequently used industry and financing acronyms:

PPA	Power Purchase Agreement
ITC	Investment Tax Credit
PTC	Production Tax Credit
RPS	Renewable Portfolio Standard
FIT	Feed-in Tariff
REC	Renewable Energy Credit
SREC	Solar Renewable Energy Credit
NMTC	New Market Tax Credit
PACE	Property Assessed Clean Energy
MLP	Master Limited Partnership



Energy Landscape

Traditional Energy

Electrical Generation:

Coal, Nuclear, Natural Gas
Oil

Transportation:

Oil, Natural Gas

Alternative Energy

Electrical Generation:

Solar, Wind, Geothermal
Bio-mass

Transportation:

Battery, Bio-fuel, Fuel-cell

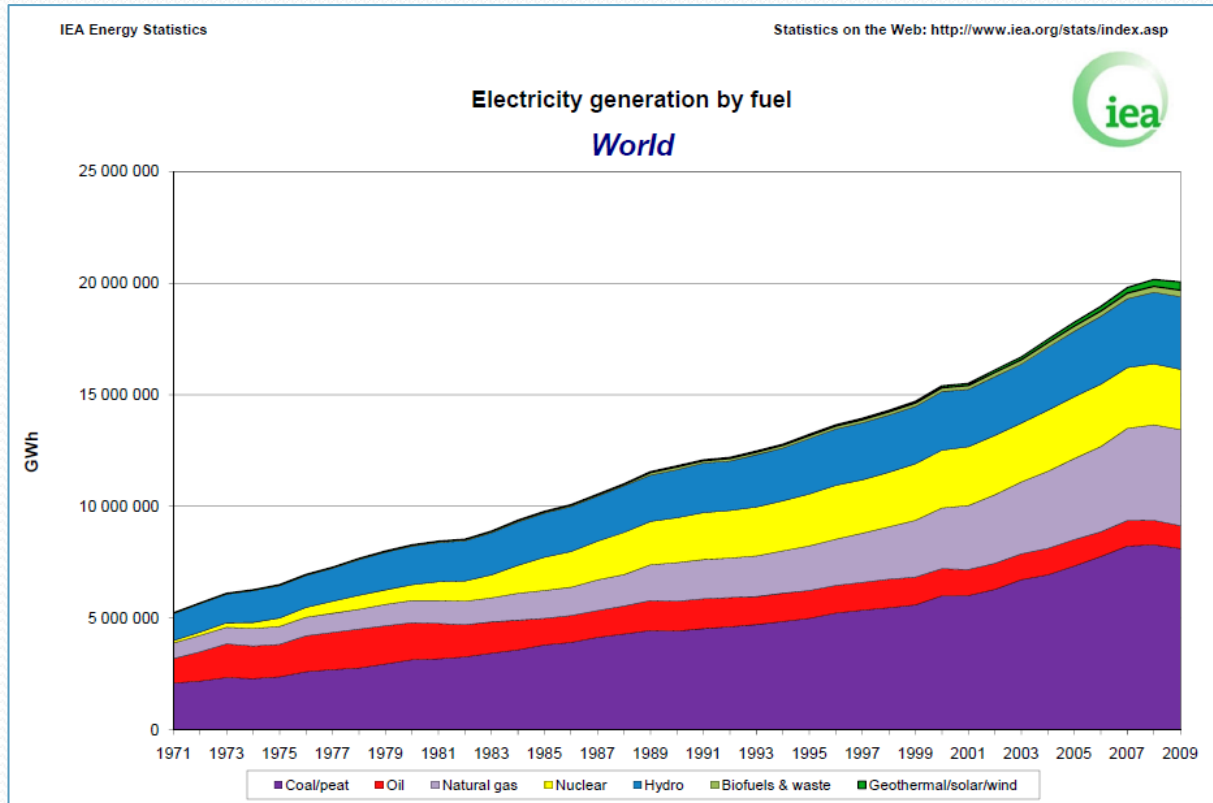
Efficiency – “negawatts”

Global Energy Industry Transformation

- ❖ A secular, not cyclical, transformation is underway on a global scale
- ❖ Boom and Bust cycles within the larger transformation will continue to alter the short-term velocity of alternative energy implementation
- ❖ Alternative energy industry maturing rapidly
 - Technological advancements
 - Manufacturing improvements and scale
- ❖ *Rate of change in pricing, incentives and politics increasing*



Global Energy Industry



Global Alternative Energy Industry

- ❖ International Energy Agency (IEA):
Global new investment in renewable electricity generation increased 19% to \$250 billion in 2011.
- ❖ Bloomberg New Energy Finance:
Global capital investment in Q2 2012 = \$59.6 billion
- ❖ Cleantech Group:
Venture capital investment in Q2 2012 = \$1.5 billion
Green IPOs (all Chinese) in the second quarter of this year = \$1.2 billion

- Japan: Fukushima disaster impacting nuclear generation worldwide
- Germany: Japanese disaster impacting velocity of implementation
- China: Governmental and manufacturing impacts



China Contribution: Good and Bad

- ❖ IEA estimates China will account for 40% of global renewable capacity addition from 2011-2017
 - 270MWs (110MW of Hydropower)
- ❖ Manufacturing prowess, increasing scale, lower prices
 - + Positively impacting the adoption rate of renewable generation on a global basis
 - + End user benefits increase
- ❖ Substantial financial governmental support for renewables and domestic industry growth leading to unintended consequences
 - Fair trade?
 - Industry development/jobs
 - Economic development

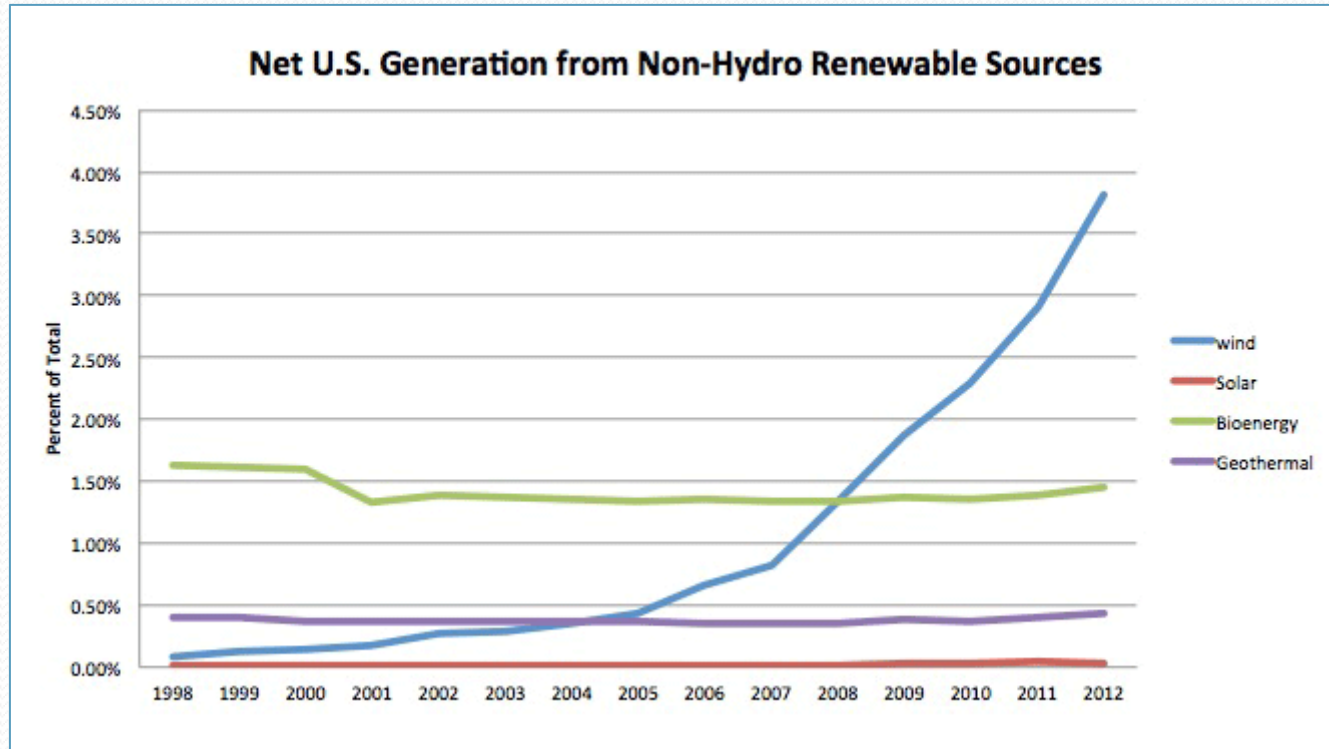
US Market

- ❖ Energy infrastructure and related markets had experienced a relatively long period of stability
- ❖ Utilities retained control and are notorious conservative when planning and forecasting
- ❖ The Constant now is...

CHANGE!

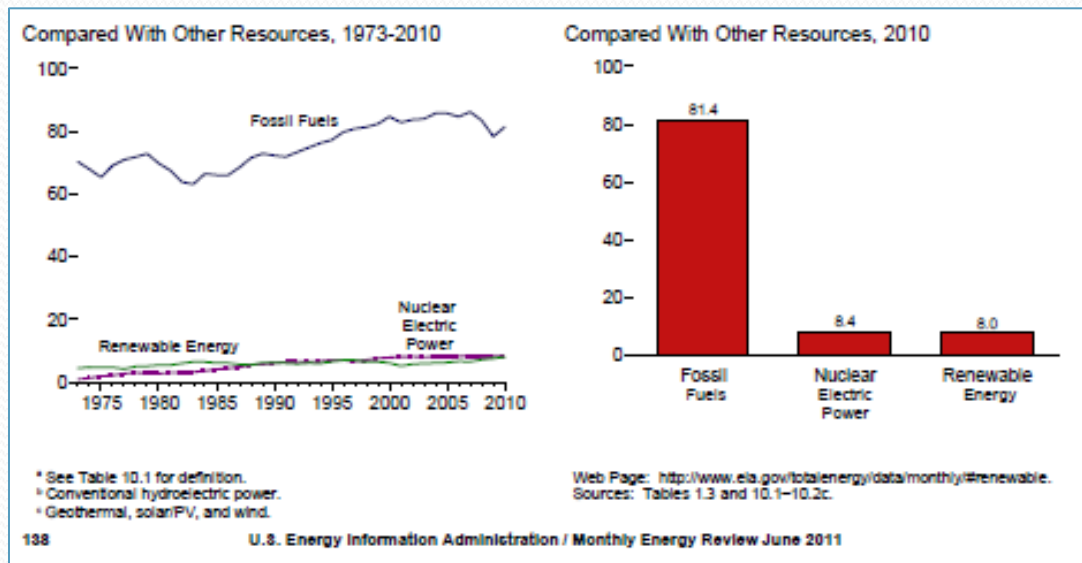


US transformation continues



Source: USEIA

Opportunity Remains



Pricing is Paramount

Pricing in two forms:

Capital costs per kW \$3,500/kW for solar array

Cost (revenue) per kWh \$0.07/kWh pricing for output

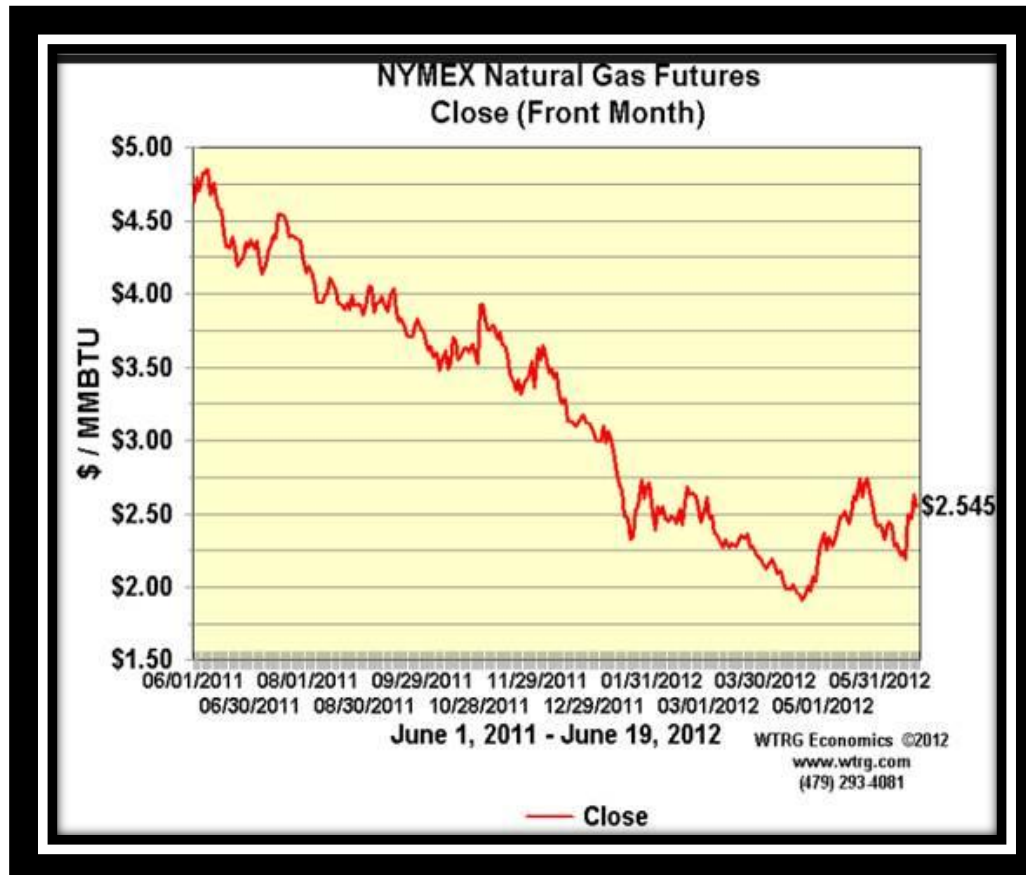


United States kWh Pricing



Source: USEIA

Natural Gas Pricing Impact



Incentive Programs

Global, National, Regional, State and Local programs

Enhance Financing

ITC till 2016

FIT Programs

State SREC Programs

Impede Financing

1603 Treasury Grant

PTC start and stops

State SREC Programs



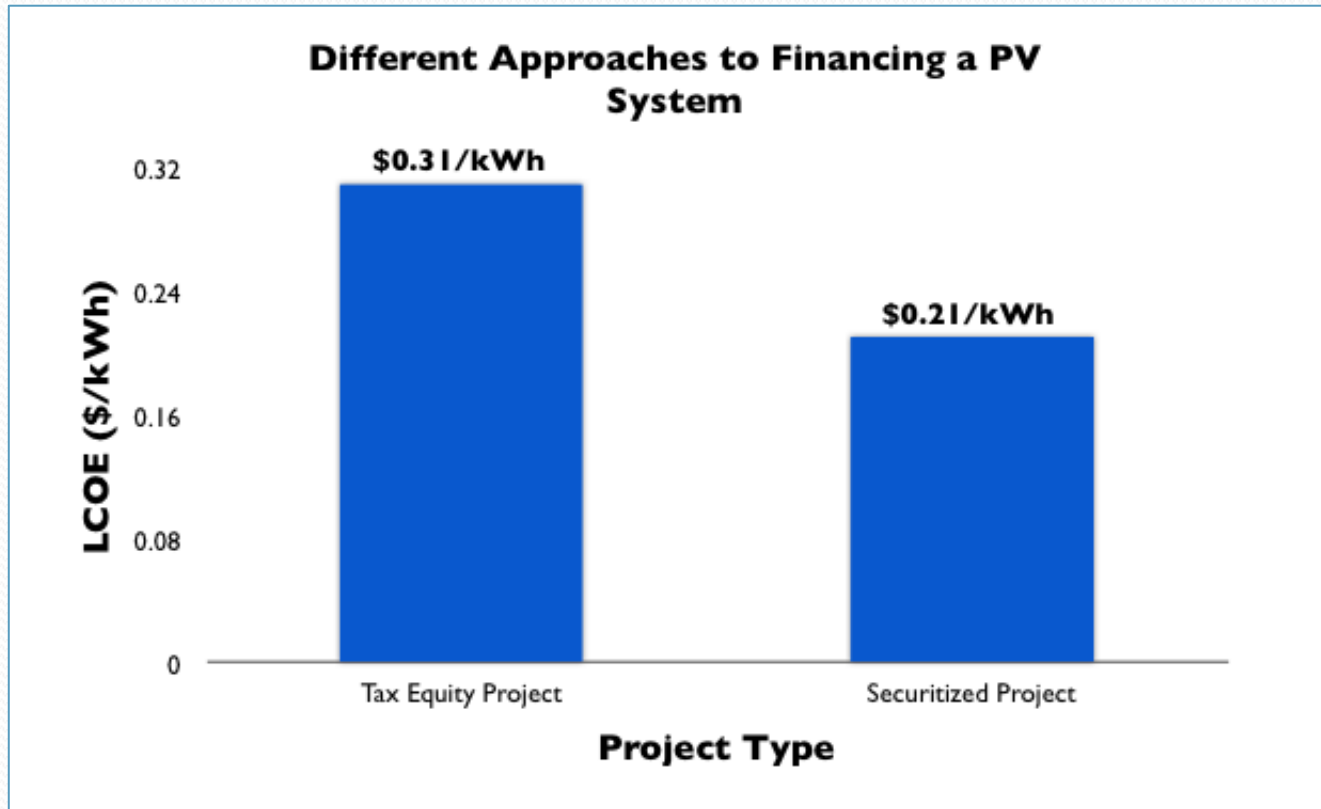
Political Maneuvering

- ❖ Presidential election looms
 - DOE loan program successes and failures
 - Jobs vs. increased costs vs. higher taxes
- ❖ Regional, State and Local pressures
 - RGGI, SRECs
 - Michigan vote to increase the State RPS

Financing Options

- ❖ Bankability of project characteristics impact the viability of financing options
- ❖ Various credit ratings impact costs
 - PACE – Tax billing
 - California - Utility billing
 - NMTC
 - MLP
 - Community sharing
 - Securitization

Impact of Innovative Financing



Source: RMI

Summary

- ❖ ***Secular*** energy industry transformation
 - Market share of alternative energy remains small
 - Penetration of new technology ramping
 - Opportunity to participate remains large
- ❖ The rate of change in all aspects of the energy industry requires ***innovative financing techniques*** to improve:
 - Pricing
 - Feasibility
 - Success/failure rate of project development



AERCA

A D V I S O R S