Tax Policy Changes Affecting the Renewable Generation Industry

Renewable Energy Incentives
Good Policy or Bad Policy?
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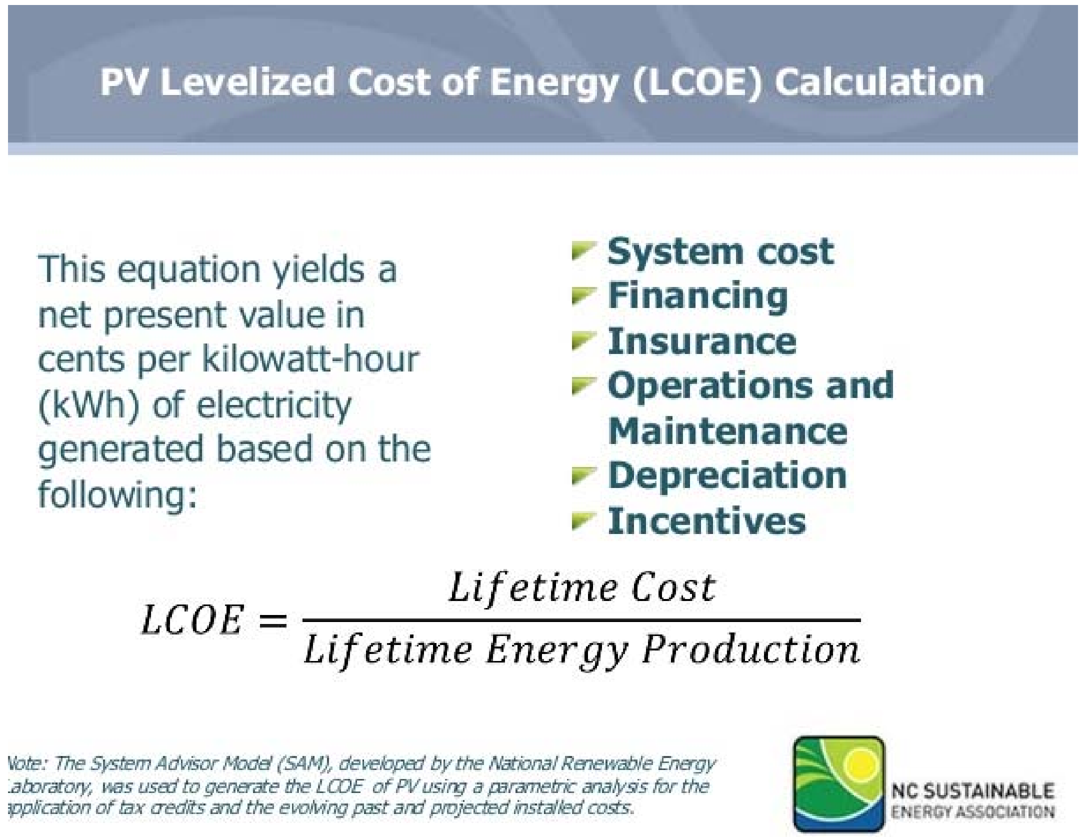
Renewable Energy Incentives

Governments institute programs to motivate investment and promote public policy goals.

- ✓ Production Tax Credits (PTC)
- ✓ Cash Grants (CITC)
- ✓ Investment Tax Credits (ITC)
- ✓ State PTCs
- ✓ Tax Exemptions
- ✓ Tax Exclusions
- ✓ Local Tax Abatements
- ✓ School Tax Limitation Agreements

Levelized Cost of Electricity

- The levelized cost of electricity (**LCOE**) is a measure of a power source which attempts to compare different methods of electricity generation on a comparable basis.



Incentives Comparison Across Energy Sector- It's Electrifying

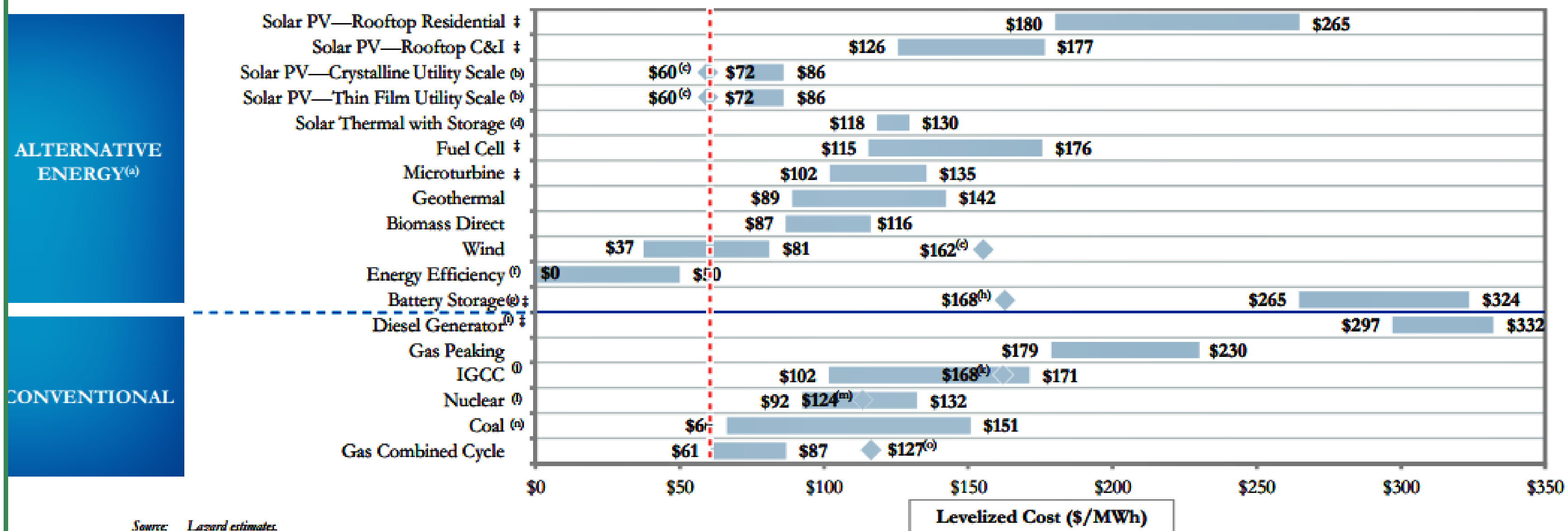
Exhibit 1 – Summary of Federal Energy Incentives, 1950–2010

(Billions of 2010 Dollars[1])

TYPE OF INCENTIVE	ENERGY SOURCE							SUMMARY	
	Oil	Natural Gas	Coal	Hydro	Nuclear	Renewables[2]	Geothermal	Total	Share
Tax Policy	194	106	35	13	-	44	2	394	47%
Regulation	125	4	8	5	16	-	-	158	19%
R&D	8	7	36	2	74	24	4	153	18%
Market Activity	6	2	3	66	-	2	2	80	10%
Gov't Services	34	2	16	2	2	2	-	57	7%
Disbursements	1	-	7	2	-18	2	-	-6	-1%
Total	**369**	**121**	**104**	**90**	**73**	**74**	**7**	**837**	
Share	44%	14%	12%	11%	9%	9%	1%		100%

Unsubsidized Levelized Cost of Energy Comparison

Certain Alternative Energy generation technologies are cost-competitive with conventional generation technologies under some scenarios; such observation does not take into account potential social and environmental externalities (e.g., social costs of distributed generation, environmental consequences of certain conventional generation technologies, etc.) or reliability-related considerations (e.g., transmission and back-up generation costs associated with certain Alternative Energy generation technologies)



Source: Lazard estimates.

Note: Here and throughout this presentation, unless otherwise indicated, analysis assumes 60% debt at 8% interest rate and 40% equity at 12% cost for conventional and Alternative Energy generation technologies. Assumes Powder River Basin coal price of $1.99 per MMBtu and natural gas price of $4.50 per MMBtu. Analysis does not reflect potential impact of recent draft rule to regulate carbon emissions under Section 111(d).

‡ Denotes distributed generation technology.

(a) Analysis excludes integration costs for intermittent technologies. A variety of studies suggest integration costs ranging from $2.00 to $10.00 per MWh.

(b) Low end represents single-axis tracking. High end represents fixed-tilt installation. Assumes 10 MW system in high insolation jurisdiction (e.g., Southwest U.S.). Not directly comparable for baseload. Does not account for differences in heat coefficients, balance-of-system costs or other potential factors which may differ across solar technologies.

(c) Diamonds represents estimated implied levelized cost of energy in 2017, assuming $1.25 per watt for a single-axis tracking system.

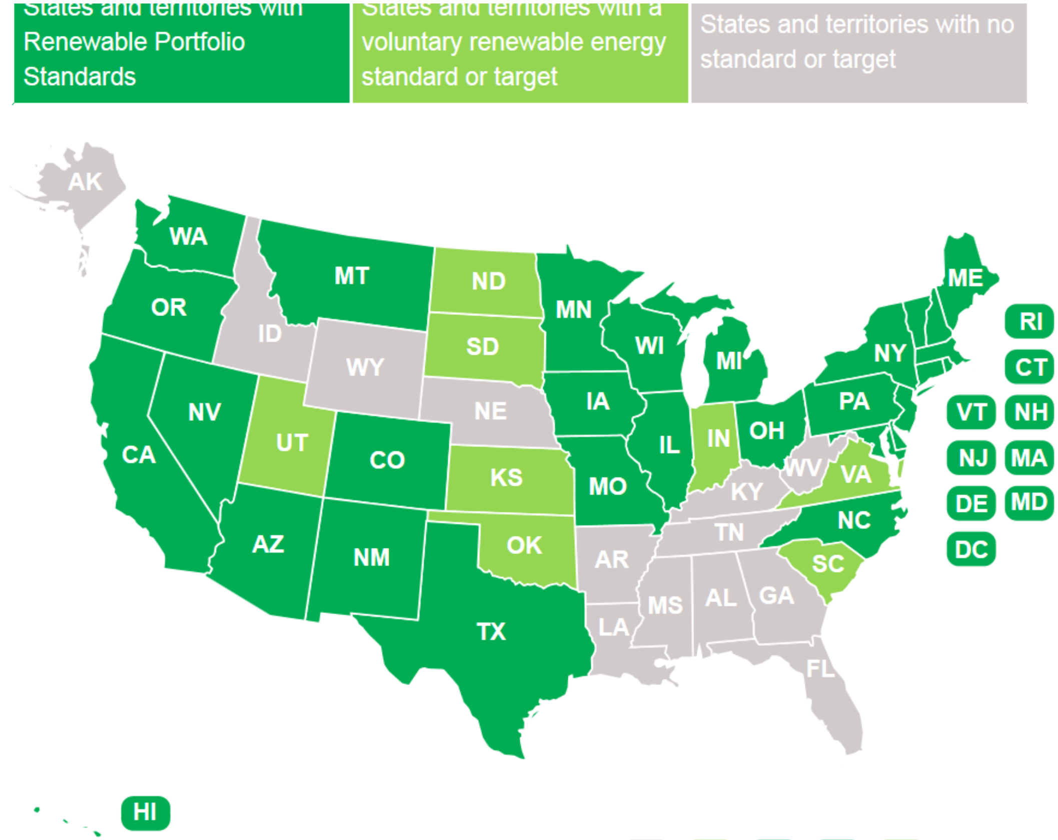
(d) Low end represents concentrating solar tower with 18-hour storage capability. High end represents concentrating solar tower with 10-hour storage capability.

(e) Represents estimated implied midpoint of levelized cost of energy for offshore wind, assuming a capital cost range of $3.10 – $5.50 per watt.

Renewable Energy Requirements

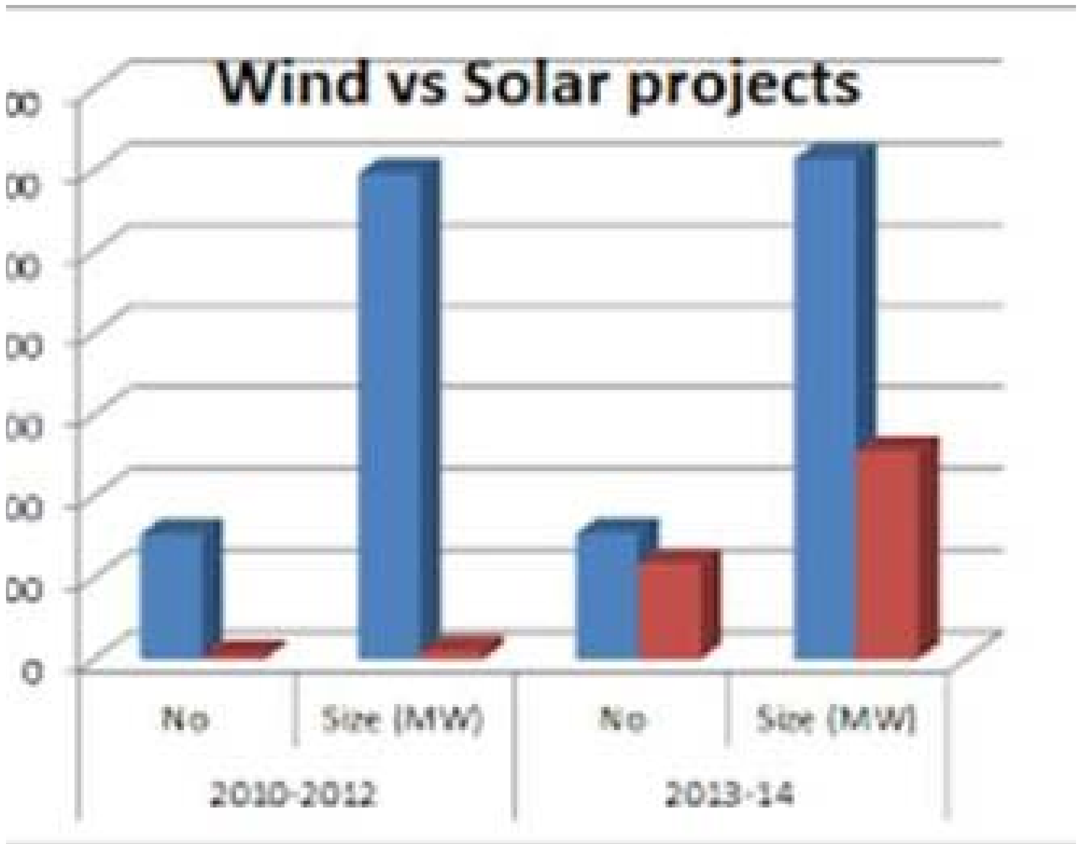
Contrasting federal and state renewable generation incentives.

- ✓ Renewable Portfolio Standards
- ✓ Are federal incentives and RPS compatible or mutually exclusive?
- ✓ Potential dilemma – what happens to RPS, if federal incentives are discontinued?
- ✓ Potential dilemma, continued – what happens to federal incentives, if state RPS requirements lose favor?



Growth Rates of Wind (red) and Solar (blue)

- Can growth be tracked to policy changes?
- Solar has grown, since Investment Tax Credit took effect in 2006
- Before: $800 million industry
- After: $15 billion industry
- Projection: 20 GW of solar will be installed in the next two years
- More capacity will be installed each week than in calendar year 2006



State Incentives

If renewable energy is right for the environment, is it necessarily right <u>economically</u> for customers?

Contracted Energy Pricing (Purchase Price Agreements) can be influenced by RPS

- ✓ Avoided costs of obtaining green power from neighboring states
- ✓ Renewable Energy Credit (REC) benefits
- ✓ Premium over day-ahead pricing for conventional generation

Are Incentives Necessary?

Latest PTC extension package phases-out incentives by 2020

Policy implications

- ✓ Can wind development be sustained without incentives?
- ✓ Can solar development be sustained without incentives?
  - ✓ Marketplace dynamics (supply/demand)
  - ✓ Employment implications
  - ✓ Environmental impact

Smells Like Green Spirit

Has policy had a positive impact on renewable energy and is there more to come, or have we achieved nirvana?

- ✓ Has growth occurred because of incentives? Despite incentives?
- ✓ Has dependence on incentives been institutionalized?
- ✓ What unintended consequences have arisen as a result of incentivized renewable energy policy?

U-shaped distribution

Goldilocks finds a house occupied by three bears. Each bear has its own preference of food and beds. After testing all three examples of both items, Goldilocks determines that one of them is always too much in one extreme (too hot or too large), one is too much in the opposite extreme (too cold or too small), and one is "just right".

- ✓ Transmission constraints
  - ✓ Too lax – overbuild followed by curtailment
  - ✓ Too strict – inaction by developers

Transition and Assessment

What happens when states that once incentivized renewable energy development later take their feet off the incentive accelerator?

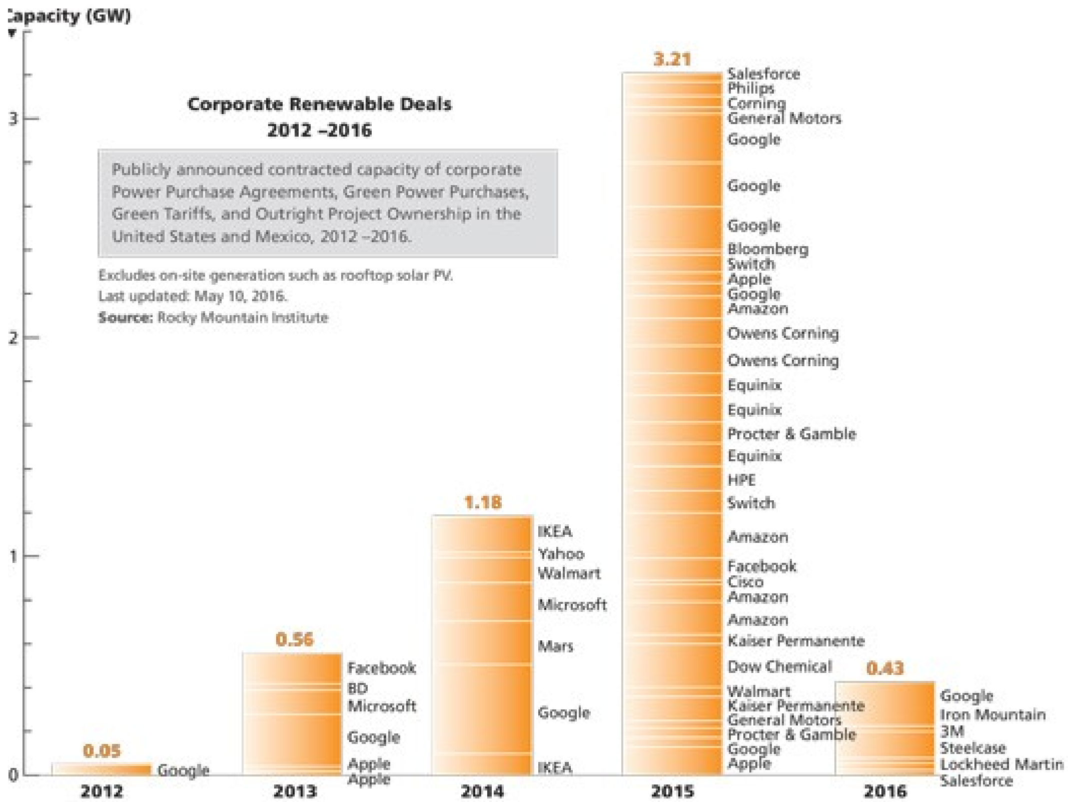
Policy Consequences

- ✓ Transition from nontaxable or partially taxable to fully taxable
- ✓ Determination of "cost" value indicator
- ✓ Application of "income" model
- ✓ Impact on assessment ratios
- ✓ Effect on manufacturing incentives

Renewables and Rate-Regulated Utilities

In recent months, concerns have been raised about the incumbent, rate-regulated utility model and what is in store in the future.

- ✓ **Distributed, renewable generation and its impact on existing utilities?**
- ✓ **Nuclear**
- ✓ **Stranded investment**
- ✓ **Provider of last resort**
- ✓ **Pricing structure – retail vs. wholesale**



Cons: Renewable Energy Policy and Incentives

1. The wind and solar industries will be fine without subsidies.
2. The wind and renewable production tax credit will divert $16.6 billion in taxes.
3. Energy subsidies have nothing to do with global warming.

source: http://dailysignal.com/2015/12/14/5-reasons-why-we-shouldnt-keep-subsidizing-wind-and-solar-energy/

Pros: Renewable Energy Policy and Incentives

1. Environmental benefits: costs of natural gas, coal, and nuclear power do not include costs of side effects.

2. Low-carbon technologies are integrated with an infrastructure that was constructed with public-sector support, including tax credits, low-cost loans, and grants from the federal government.

3. Existing policies reduce energy costs for middle- and lower-income families.

source:
http://cleantechnica.com/2013/02/23/external-costs-of-fossil-fuels/

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