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Structuring the Solar Deal

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Three Important Facts About Electrical Supply

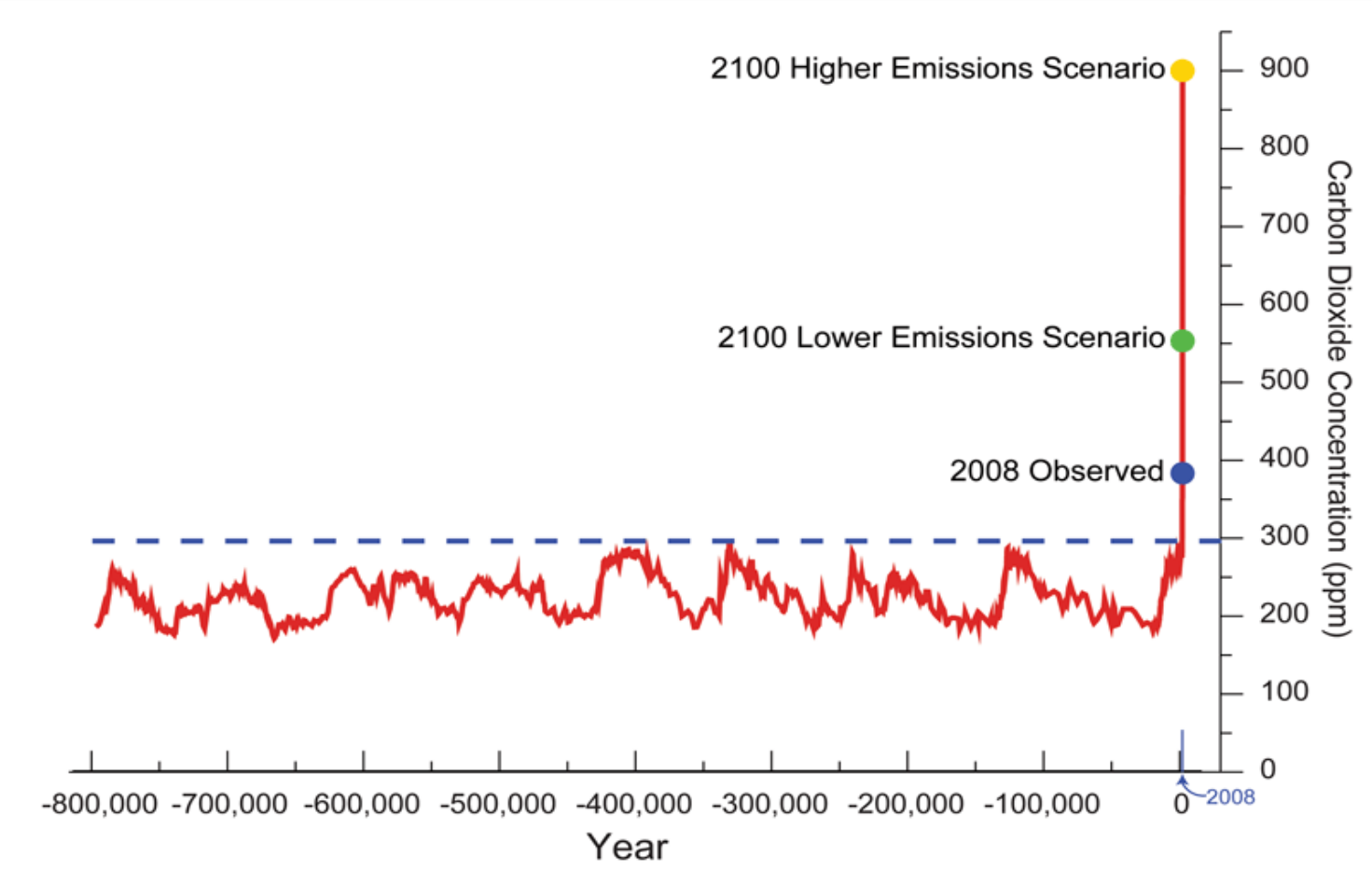
1. Electricity user depends on energy provided by state-regulated utilities.

2. Overwhelmingly, the utilities produce electricity by burning fossil fuels that create greenhouse gases and other emissions (e.g., mercury).

3. Electricity from fossil fuels is expensive and the price is very likely to continue to climb.

The Fossil Fuels Problem: It Causes Climate Change and Threatens Public Health (NOAA):

Spiking Carbon Dioxide Levels:



Climate Change Impacts

U.S. EPA:

- At twice the carbon dioxide level, the climate of the basin will be warmer by 2-4°C and slightly damper than at present.
- Toronto's climate would resemble the present climate of southern Ohio.
- Warmer climates mean increased evaporation from the lake surfaces.
- Decreases in average lake levels will be about two to six feet, depending on the General Circulation Model used.

http://www.epa.gov/glnpo/atlas/glat-ch2.html

The Cost Problem

- Retail prices that utilities charge electricity user are high and increasing.
- Even though natural gas has been cheaper, electric rates continue to rise.
- EPA rules affecting fossil-fuel (especially coal) plants likely to further increase costs.

Overview of EPA's Clean Power Plan

- Provides emission guidelines for states to follow and developing state implementation plan ("SIP")
- Applies to coal-fired electrical generation units ("EGU's")
- ID should be concerned about impact of Plan in those states where it is facilities served by coal-fired generation.
- Goal is to get a 30% reduction in carbon dioxide emissions by 2030 compared against 2012 baseline.
- The Plan has already attracted several legal challenges

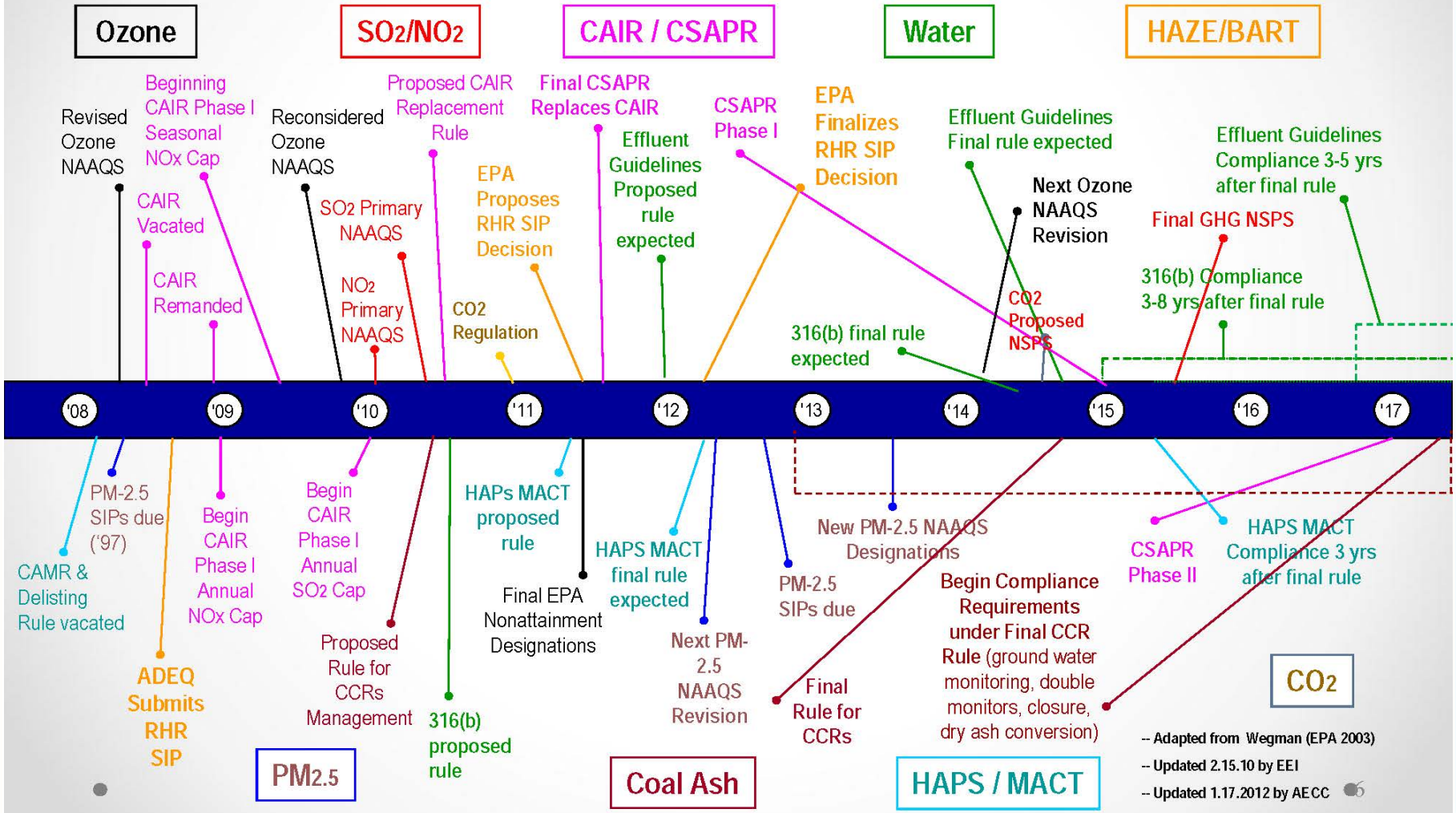
EPA Proposed Strategies for States to Implement EPA Goals

- Reduce carbon dioxide emissions from the covered EGU
- Increase the use of existing natural gas fired combustion EGU
- Expand the use of low carbon renewable-energy generating units
- Expand the use of demand-side energy-efficiency programs for EGU customers
- Guidelines for states to implement the goals are not limited to these 4 building blocks and can be expanded

Timeline for Plan

- Plan proposed on June 18, 2014
- Over 4 million public comments
- EPA to finalize Rule October, 2015
- State must submit SIP within one year (October, 2016)
- State must meet CO_2 goals by 2030

Timeline for Environmental Regulatory Requirements for the Utility Industry



Summary of Opportunities/Costs for IU Under the Plan

- The Plan when adopted presents a significant increase in electrical costs for IU in those states where there is a high percentage of base-load generation provided by coal fired EGUs
- If IU has already employed significant energy efficiency reductions for its facilities, it will be difficult to “squeeze out” more efficiencies at its facilities under the Plan.
- IU may want to consider is consolidating production from other parts of the country into those areas that are served by fewer coal fired EGUs.
- IU may want to consider taking steps now to reduce energy costs and increase revenue opportunities under the Plan.

Involvement on State SIP Task Force

- Energy Users (“EU”) should monitor the draft SIPs in those states where it has large facilities and file comments to those SIPs where appropriate.
- Want to make sure that there are no mandatory requirements on customers and that customers are fully compensated for their energy-efficiency and renewable-energy projects.

Potential Steps to Reduce Costs and Increase Revenue Opportunities under Plan

- Energy efficiency: Document efficiency gains, including gains from shifting to high-efficiency plants.
- On-site energy generation:
  - Solar: Consider taking advantage of 30% investment tax credit and beneficial state programs.
  - Biomass/biogas generation: Consider ability to qualify for 30% investment tax credit, to offset high cost/carbon flat-load energy, and to use waste heat.
  - Natural gas generation/cogeneration: Consider opportunities for facilities with high cost/carbon energy, flat-load, and potential use of waste heat (10% investment tax credit for cogeneration)
  - Consider third-party financing of generation facilities.

Solutions:

- Work toward long-term energy independence by transitioning to renewable, user-based sources of energy;
- Reduce carbon footprint;
- Reduce short-term and long-term energy costs.

Strategy for Solar

- Use energy consumption and solar opportunities as marketable assets;
- Take advantage of future CO_2 emission credits;
- Partner with taxpaying entities to take advantage of tax incentives.

Key Energy Terms: Kilowatts & Megawatts

- Energy output is measured in watts, kilowatts, megawatts, etc.
- Energy consumption is measured in kilowatt hours (kWh) and megawatt hours (MWh).

Key Energy Terms: Kilowatts & Megawatts

2013 average residential monthly electricity consumption:

- U.S.: 909 kWh @ 12.12 cents per kWh.
- AZ: 1049 kWh @ 11.31 cents per KWh
- CAL: 557 kWh@ 16.19 cents per kWh
- NM: 655 kWh @ 11.68 cents per kWh
- NY: 602 kWh @ 18.79 cents per kWh
- WI: 703 kWh @ 13.55 cents per kWh

U.S. Energy Information Agency
http://www.eia.gov/tools/faqs/faq.cfm?id=97&t=3

Key Energy Terms: Kilowatts & Megawatts

A kilowatt hour (kWh) is:

The amount of electricity used, in kilowatts (1000 Watts = 1 kW) multiplied by number of hours the energy is used.

(e.g., you have a 100 W light bulb and you have it on for 10 hours a day then: 1000W (1/10 kilowatt) x 10 (hours) = 1 kWh per day.)

Key Energy Terms: Kilowatts & Megawatts

An 8 kW solar array could provide enough energy to power an average home (on average 23 kWh per day).

It would cost about $30,000 to $40,000 and look something like …

This:


SOLAR
BAY VIEW

Limitations of Solar

- Electricity is consumed not only during the day but also in the evening and at night.
- A solar array produces energy only during daylight.

Sources of Financing

- Renewable Energy Investment Tax Credits
- Federal Grants
- State grants and utility company grants.
- Renewable energy credits/carbon offsets.
- New Markets Tax Credits
- Bond financing.
- Federal Loan guaranty programs
- Renewable Energy Credits (“RECs”)

There are Many Federal Grants, e.g.:

- DOE and State Grant Programs
- U.S. EPA Brownfield, Climate Showcase Community, and others grants
- USDA Rural Energy for America Program, Rural Utilities and Community Facilities

Energy Credits from Renewable Sources

Energy Source	Credit	When is Credit Claimed?	Expiration	30% ITC Election in Lieu of PTC?	Grant in lieu of PTC or ITC -Placed in service 2009 or 2010 or begin construction by 12/31/11 and in service by:
Wind - PTC	2.2 cents per kwh*	10 years	Begin construction by 12/31/2014	Yes	1/1/2013
Closed-loop biomass – PTC	2.2 cents per kwh*	10 years	Begin construction by 12/31/2014	Yes	1/1/2014
Geothermal – PTC	2.2 cents per kwh*	10 years	Begin construction by 12/31/2014	Yes	1/1/2014
Open-loop biomass – PTC	1.1 cent per kwh*	10 years	Begin construction by 12/31/2014	Yes	1/1/2014
Landfill gas / trash – PTC	1.1 cent per kwh*	10 years	Begin construction by 12/31/2014	Yes	1/1/2014
Qualified hydropower – PTC	1.1 cent per kwh*	10 years	Begin construction by 12/31/2014	Yes	1/1/2014
Marine and hydrokinetic – PTC	1.1 cent per kwh*	10 years	Begin construction by 12/31/2014	Yes	1/1/2014
Solar, fuel cell, small wind - ITC	30%	Placed in service	12/31/2016	N/A	1/1/2017
Geothermal, gas microturbine, cogeneration - ITC	10%	Placed in service	12/31/2016	N/A	1/1/2017

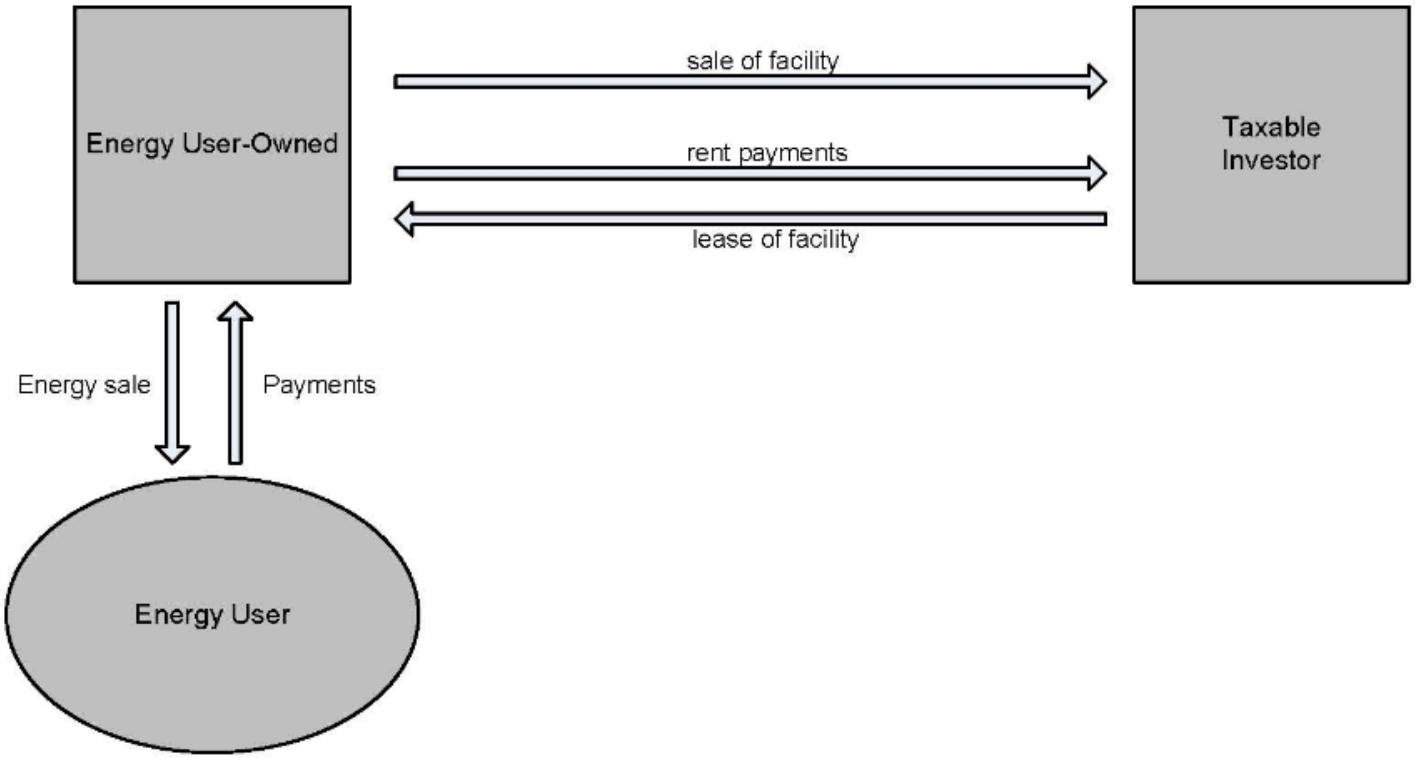
How Tax Credits Work

- The tax code has many incentives for renewable energy and, to a lesser degree, energy efficiency projects.
- Some energy users (governments, not-for-profits, etc.) do not pay federal income taxes.
- Some EUs may not be in high tax brackets.
- Opportunities for EUs to partner with investors who can take advantage of depreciation and other tax deductions and tax credits in return for financial benefits from the EU.

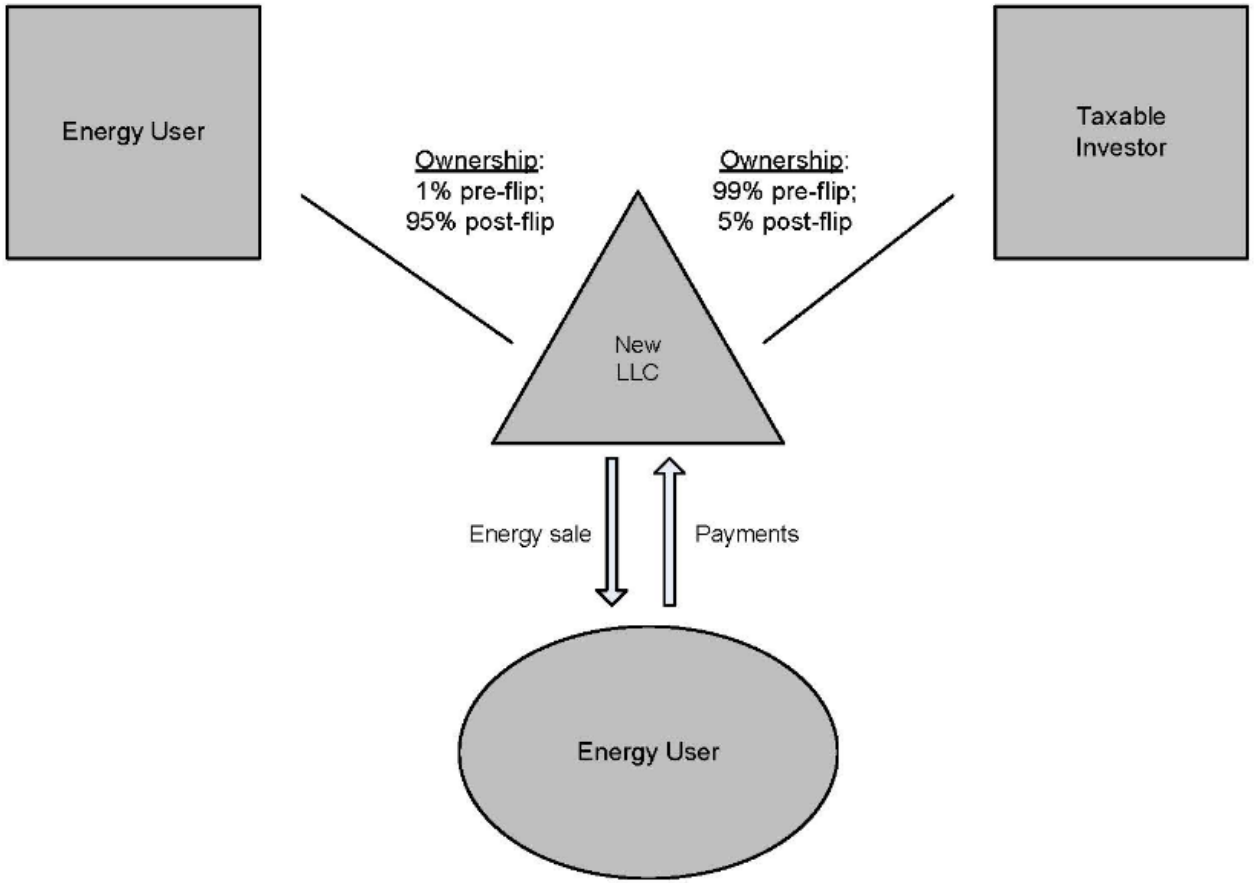
The Basic Approach

- Monetize investment tax credits to pay for approximately 30% of construction/installation of facility
- Further reduce the EU's out-of-pocket development cost with energy grants, CO_2 reduction credits, etc.
- Pay less for electricity while paying off remaining costs over 6-15 years through a power purchase agreement
- Assume full ownership after the development costs are paid

Ownership Structures: Sale and Leaseback



Ownership Structures: Partnership Flip



Key Business Terms

- Depreciation: The right to deduct capital costs, over time, from taxable income;
- Tax Credit: A dollar for dollar credit against income taxes otherwise due;
- LLC: Limited Liability Company: A partnership-like structure that allows for allocation ownership interests for tax purposes of profits and losses

The Energy User's Deal with the Investor

Put simply:

1. The EU and the tax investor, who is could be the developer, form an LLC.

2. The EU agrees to give the investor a 99% ownership interest in the LLC so that the investor can claim 99% of the investment tax credits, which the EU can't use.

3. In return, the investor agrees to make economic contributions that significantly reduce the cost of the project to the EU.

The Energy User's Deal with the Investor

- There's an LLC or partnership with an investor.
- The investor is given the ownership interest in order to claim the tax credits.
- The investor compensates the EU for the tax credits by contributing equity to the project.
- After a period of years, the investor goes away and the EU keeps the project BUT…

Related Agreements: (PPA)

The Power Purchase Agreement ("PPA")

- Determines what the EU will pay to the LLC for energy during the payback period.
- Should be less than what the EU currently pays to state-regulated utility.
- Will constitute part of the investor's "return on investment."

High Energy Costs Are Good for Solar Development

- Current retail energy costs, even for flat loads, are high and increasing.
- Utilities typically pay developers of solar arrays, wind turbines, etc. only a low wholesale price for the energy the facilities produce.
- Because of this, developers need good host sites for their energy facilities.
- EU can pay developers more than the utility wholesale rate, but less than the EU is currently paying the utility for energy retail.

Thank You.

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