

Co-locating Renewable Power with Natural Gas

ISSUE SUMMARY:

Just as a hybrid car gets power from two sources – gasoline and a battery – a power plant can become a hybrid plant when a renewable source of power is co-located with a coal or gas plant.

Many types of renewable power work similarly to fossil fuel power: heat creates steam which turns a turbine to produce power. Steam from a geothermal or solar thermal plant could turn a turbine at a traditional plant.

Additionally, some of the biggest capital costs for large renewable plants are the turbine and the transmission infrastructure. Co-locating renewable generation with an existing gas or coal plant allows the renewable plant to use the turbine already there and eliminates the need for costly new transmission lines. For new plants, these costs would be shared.

Ideally, the renewable energy produced at a hybrid plant would qualify for renewable energy credits (RECs), the tradable certificates issued for megawatt-hours of renewable generation.

Unfortunately, renewable power co-located with fossil fuel plants is not eligible for RECs if fossil fuels produce more than 25% of the power.

There is no reason to limit the potential hybrid renewable plants as long as only the quantifiable renewable portion earns RECs.

KEY POLICY CONSIDERATIONS:

The Legislature could:

- Allow all power generated by renewable sources to qualify for RECs, even if it is co-located with fossil fuel plants.
- Require the Public Utility Commission to develop rules and regulations to ensure that only the renewable power generated at the plant qualifies for RECs.



Rendering of Florida Power and Light's Martin Next Generation Solar Energy Center, a hybrid natural gas-solar plant in Indiantown, FL. The mirrors provide 75 megawatts of thermal solar power.

Source: FPL

TALKING POINTS:

- By co-locating renewable sources of power with existing infrastructure, hybrid power plants offer a way to get renewables on the grid for a lower cost.
- Just as a battery can propel a hybrid car for limited amounts of time, a renewable source of power can propel a steam turbine in partnership with fossil fuels.
- At a hybrid plant, natural gas could supplement and stabilize the production of steam by the solar field, for example, creating a reliable firm peak power product.

OPPONENTS SAY:

- *“The cap is needed to prevent an existing coal generation plant from burning small amounts of biomass or waste, and getting credit for the renewable fuel burned.”*

RESPONSE: With or without the cap, the law and PUC rules would only allow the power generated from the renewable fuel to obtain credits, or meet the obligation of retail electric providers.

- *“The Renewable Portfolio Standard was intended to cause the development of new generation plant, not just to displace fuels at existing plants.”*

RESPONSE: After several years under the original RPS this seems less of an issue, although displacement of fossil fuel use at existing plants offers economic and environmental benefits.

BACKGROUND AND HISTORY:

When the first Renewable Portfolio Standard was adopted, concerns were expressed that existing coal plants might simply supplement their fuels with a modest amount of biomass fuels (like wood waste) as a way to meet the new requirements.

To ensure this would not happen, only the renewable fuel generated power was eligible for credits and a cap of 25% fossil fuels used at a hybrid site was established.

This cap could now prevent renewable projects.

For example, Texas is blessed with thousands of megawatts of potential geothermal power: hot waters found in conjunction with high pressure natural gas. The gas has not been produced historically because the high volume of hot water.

If we now try to produce the geothermal waters to produce steam-driven power, the current cap could prohibit the geothermal power from earning RECs and thus also prevent the efficient use of associated natural gas.

RESOURCES AND CITATIONS:

Solar Power You Can Count On.

<http://www.energybulletin.net/49878>

National Renewable Energy Lab on Concentrating Solar Thermal Power

<http://www.nrel.gov/csp/>

Other Studies of Large Scale Solar:

https://www.utilityscalesolar.com/CSP_Reports.html

US Department of Energy Geothermal Program:

<http://www.eere.energy.gov/topics/geothermal.html>

Southern Methodist University, Geothermal Energy Laboratory:

<http://smu.edu/geothermal/>