

Fact Sheet on the Governor's Coal Plant Agreement with Sunflower Electric - Updated 5-22-09

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The Governor has justified his May 4, 2009 settlement with Sunflower Electric Power Corporation primarily on two premises. First, and most importantly to the Governor, the settlement broke the impasse in the Kansas legislature and allowed passage of measures that will promote the use of renewable energy resources in the state. Secondly, the settlement is subject to conditions whereby Sunflower and partners would "offset" a substantial portion of the carbon dioxide emissions from the proposed 895 megawatt (MW) coal-fired power plant, Holcomb 2. The purpose of this fact sheet is to assess the validity of these premises and associated claims.

A. Does the Deal Boost Renewable Energy in Kansas?

The major elements of the legislation (Senate Substitute for HB 2369) in this regard are the *Renewable Energy Standards (RES) Act* and the *Net Metering and Easy Connection Act*.

- 1. RES Act.** This new law would require affected utilities to use renewable energy generating capacity equal to 10% of peak demand by the year 2011, 15% by 2016 and 20% by 2020. But what legislators giveth they taketh away in the fine print. For each MW of renewable generating capacity that a utility installs after January 1, 2000, they get a credit of 1.1 MW toward compliance. Thus the real standard is 9.1% by 2011, 13.6% in 2016 and 18.2% in 2020. In other words they gave the utilities a 10% discount at the outset.

Next, the legislation says that the enforcement agency, the Kansas Corporation Commission (KCC), must exempt a utility from penalties for non-compliance if the company can show that compliance in any year would raise rates by more than 1%. ***This renders the Act unenforceable.*** Almost all the existing generating capacity in the rate base of major Kansas utilities was installed decades ago and is operated at 2-3 cents per Kwh. New renewable generating capacity starts at 5 cents (wind farms with the production tax credit) and goes up from there. It is inevitable that rates will increase more than 1%.

Finally, former Governor Sebelius had already gained from the major utilities a promise to comply with a 20%-by-2020 RES. In fact most Kansas utilities already have in the works wind farms that will comply with the 2011 requirement in the RES Act. Thus we can say that the RES Act will have no significant effect on the deployment of renewable energy generation capacity in Kansas.

- 2. Net Metering and Easy Connection Act.** Net metering allows a business or a homeowner to install their own electricity generating unit, such as a solar panel or small wind turbine, and then get a credit by sending excess power back into the grid. Again this sounds great until one gets to the fine print:
 - This applies only to investor-owned utilities, not to cooperatives like Sunflower Electric or to municipally owned electric utilities. This means it would not apply to vast areas in western Kansas with the best wind and solar resources. That's

where people would most likely want to use net metering, and they can't.

- The use of net metering is capped at 1% of a utility company's peak demand. Based on KCC data for 2008 the sum total of net metering that could be utilized would be only 67MW. That compares to some 11,000 MW of existing generating capacity of all types in the state. The KCC is authorized to increase this limit, but that could be difficult under a future KCC and Governor.
- User credits that accrue over the year are wiped out at year end. Thus users can never get payment or continuing credit from the company for more power than they use from the grid in any year.

- 3. Competition from Coal Plants.** HB 2369 significantly reduces the KDHE Secretary's authority to prevent or delay the issuance of a construction permit for either Holcomb 2 or any other future coal plant. The Governor's settlement agreement explicitly allows Sunflower to file for another coal plant permit after April 30, 2011.

It can be argued that opening up Kansas to new coal plants will retard the development of new wind farms and utility-scale solar thermal power plants because they would be competing both in cost, and for transmission-line space against large coal plants. The Holcomb expansion will, at certain times of the year, present a huge overhang of excess power that can be dumped at below cost onto the market. The 600 MW of the project owned by Tri-State Generation and Transmission Co. can be routed to the east when not needed in Colorado.

- 4. A Big Favor to Sunflower Electric.** HB2369 also conveniently allows Sunflower Electric to exempt itself from regulation by the KCC for the purposes of setting rates. This is curious given that other Kansas utilities have abandoned their coal plant proposals due to the high risk from rising construction costs and impending carbon regulation. Ratepayers in Sunflower's service area should be very concerned. Ironically the Colorado Public Utility Commission is considering increasing their oversight of Tri-State, Sunflower's main partner in the project. There are provisions for Sunflower's ratepayers to petition for a vote requesting KCC supervision.

Conclusion. The Renewable Energy Standard Act provides little or no incentive for the development of renewable energy in Kansas beyond what was already in place. Other measures in HB2369 that facilitate the construction of coal plants may actually retard renewable energy in the state. The Net Metering Act will have a very modest favorable impact, but is not operative in those parts of the state that have the best wind and solar resources.

B. Would the Deal Offset a Substantial Part of Holcomb 2's CO2 Emissions?

According to calculations performed by Sunflower Electric and provided to Governor Parkinson, Sunflower's proposed 895 Megawatt (MW) coal plant at Holcomb will now generate 6.67 million tons per year of carbon dioxide down from 10.72 million tons from the two 700 MW coal units in Sunflower's previous proposal. Governor Parkinson also used Sunflower's calculations to claim that the agreement includes "offsets" to these emissions amounting to 3.016 million tons or about 45% of the total. These offsets are individually examined below, the most dubious first.

To begin with, however, Sunflower & the Governor have made a systematic error by

assuming that these offsets, such as new wind farms or energy efficiency measures, will always displace the carbon emitted from their existing coal-fired generating capacity (credited at 2150 lb CO₂/Mwh). Actually the particular offset, at any point in time, may actually displace the burning of natural gas or power that they would have purchased on the open market.

For example, from April through December of 2007, Sunflower's system purchased 11% of its power on the open market and generated 13% with natural gas. Power purchased on the open market often comes from natural gas generators. Burning natural gas emits half the carbon dioxide per unit of power that coal does. It's too complicated here to estimate the real carbon reduction in lb/Mwh, but it's safe to say the discrepancy, i.e., exaggeration, is significant.

- 1. Two oil fired generating units, Garden City 1 & 2 must be permanently decommissioned from Sunflower's fleet.** An offset of 59,568 tons/yr is claimed. A look at Sunflower's website at <http://www.sunflower.net/facilities.aspx> will show that these two units are no longer listed in their summary of facilities. They were also not listed in their 2006 annual report, and they were not listed in DOE's 2003 Inventory of Existing Generating Units in the US. GC3 is still listed, and it entered service in 1962, which means GC1 & 2 are even older. Finally the Lawrence Journal World confirmed that these units have not been used for more than 20 Years! (<http://www2.ljworld.com/news/2009/may/05/units-be-decommissioned-part-coal-plant-deal-haven/>)

To include the Garden City1&2 generating units as carbon offsets is patently absurd.

- 2. Sunflower must use or cause to be used biomass fuel equivalent to 10% of the heat input to Holcomb 1 & 2.** An offset of 945,467 tons/yr is claimed. The agreement does not specify where this fuel is to be burned. However they need not proceed with this project *if it is found to be technically or economically infeasible*. Technical feasibility is not defined, which in itself indicates that this condition is not enforceable. Further, the technical feasibility of this proposal is in question.

The sum total of biomass burning must be equivalent to about 126 MW of electricity generation. According to a recent presentation to the Midwest Section of the Air & Waste Management Assn by Black & Veatch Consulting Engineers, a biomass burning operation of this size exceeds anything in regular operation in the United States. Reaching 10% co-firing in a pulverized coal boiler requires separate fuel handling facilities and boiler modifications. Also the alkali content of agricultural biomass such as switch grass may damage the boilers of power plants. Biomass burning tends to slightly reduce the efficiency of a boiler. It's obvious why Sunflower caused this technical feasibility escape-clause to be included in the agreement. It is easier to burn biomass in cyclone boilers but candidates have not been identified.

Economic feasibility *is* defined as meaning that the cost of biomass fuel may not exceed 200% of the cost of coal. According to Sunflower's presentation to the Kansas Energy Council the cost of Wyoming PRB coal delivered to Holcomb, Kansas, is about \$25.00/ton. That translates to \$1.50 per million BTUs. According to our preliminary research, wood waste could meet a \$3.00 per million BTU cost threshold, but there is little wood waste available anywhere near Holcomb.

The cost of agricultural biomass would likely be several times that of PRB coal. This is due to the high cost of collecting and transporting such a diffuse resource. For example, Alliant Energy Co., which has experimented with burning switch grass, estimates it would take 50,000 acres to produce enough biomass to produce 35 MW of power and it would involve as many as 500 farmers. Also, Sunflower will be competing in the future against increasing demand for biomass needed for cellulosic ethanol production. Further, burning biomass in a utility boiler requires additional auxiliary power

Thus there is legitimate concern that Sunflower will ultimately be excused from this important performance requirement due to the cost of biomass fuel which may exceed the specified threshold. When both technical and economic contingencies are taken together, we conclude that it is unlikely that Sunflower Electric will ever burn an appreciable amount of biomass to serve as a carbon "offset" for Holcomb 2. Even if they did, the claimed offsets do not take into account the reduced boiler efficiency, the additional auxiliary power needed for the operation, nor the large quantities of fuel needed to collect the biomass in the first place.

- 3. Sunflower to use "reasonable efforts" to advance a Bioenergy Center & Algae Reactor.** An offset of 825,000 tons/yr is claimed. The dubious nature of this enterprise has been noted on the Sierra Club website (<http://www.kansas.sierraclub.org/Wind/AlgaeReactors.htm>). It is in a very early stage of development and would be prohibitively expensive. It is highly unlikely that this project will ever displace any of the carbon emitted by Holcomb 2.
- 4. Sunflower must accelerate RES compliance from 2020 to 2016.** An offset of 135,605 tons/yr is claimed. This calculation contains two errors. First, Sunflower has already contracted for 124 MW of wind power. They calculate that the additional requirement will be 20% of their members' peak of 800 MW which would yield an additional requirement of $(160 - 124) = 36$ MW. But the actual 2020 RES is 18.2% not 20% (See under section A-1 above). Thus the extra wind required by the RES Act is only 21 MW, not 36 MW.

Secondly, Sunflower had already committed to meet former Governor Sebelius's voluntary RES of 20% in 2020. So the net advantage from the settlement agreement is *21 MW of wind for four years*. But Sunflower calculates the offset as if this provision will offset emission for the 50 years or more that Holcomb 2 is in operation. That's comparing apples and oranges.

In all fairness, Sunflower deserves some credit for buying 75 MW of wind power from TradeWind Energy's Smokey Hill Wind Farm in response to pressure from renewable energy advocates and the Sebelius Administration. So alternate views on this offset claim are possible.

- 5. Sunflower must spend 1% of gross revenues for energy efficiency programs.** An offset of 376,680 tons/yr is claimed. While this would be a step forward there is no performance standard or goal specified. Former Governor Sebelius's original compromise offer included a requirement for 100 MW of energy conservation. Apparently Governor Parkinson abandoned this performance standard. Sunflower says they will achieve 40 MW under this performance requirement.

However the agreement allows Sunflower to credit any expenditure for their experimental Bioenergy Center toward the 1% requirement. In fact Sunflower may reduce expenditures for energy efficiency to only 0.5% of gross revenues if they so choose. There is no guarantee that the Bioenergy Center will ever offset a single pound of carbon. Nonetheless 40 MW is probably a reasonable estimate for this offset.

- 6. Sunflower and/or partners must build new wind farms in Kansas equivalent to 20% of the "net capacity" of Holcomb 2.** An offset of 674,257 tons/yr is claimed. Net capacity refers to output after deducting the parasitic load (to run controls etc), so it's not clear just how many MW we are talking about here, since the 895 MW coal plant is referred to as "nominal capacity" in the agreement. If one applies a typical de-rating for parasitic load, this offset should be at least 165 MW of new wind.

Although the language in the agreement is ambiguous, this new capacity is supposed to be in addition to any requirement for Sunflower and Midwest Energy to comply with a statewide Renewable Energy Standard (RES). This offset appears to be substantially valid.

Conclusion. Only the energy efficiency and the (20% of Holcomb 2) new wind requirement can be considered valid. Thus, at best, one can expect only about 15% of the 6.7 million tons of carbon dioxide per year to be offset under the Governor's settlement.

C. Other Issues in the Settlement Agreement.

- 1. Sunflower must use "reasonable efforts" to build two 345 kV transmission lines to Colorado.** *They have until 5 years after the start up of Holcomb 2 to accomplish this.* Given that it would take a year or more to both obtain the new coal plant permit and to clear appeals, and four years to construct, these lines need not be in place until 2020 or beyond. This prospect hardly supports the Governor's claims that this will be a boon to wind power in Kansas

The original Sunflower - Tri-state proposal envisioned two 600 MW coal plants that would run output through three 345 kV transmission lines. (A third plant at Holcomb was to serve Kansas and a partner in Oklahoma and Texas). One 345 kV line would run from Holcomb to Burlington, Colorado and two 345 kV lines would run from Holcomb to Lamar, Colorado. Last year the third coal plant was dropped along with one of the lines to Lamar, Colorado. Tri-state was to take 100 MW from one of the remaining two plants plus all the 700MW from the other. The two remaining transmission lines were to be beefed up to 500 kV capacity. The current settlement calls for 600 MW of the 895 MW coal plant to go to Colorado via two transmission lines that have been downsized to 345 kV each. It appears that Tri-state is more interested in sizing the transmission lines to fit their coal power needs than accommodating wind power from Kansas to Colorado.

Nonetheless if we compare the ratio of coal plant to transmission line capacity in the original plan to the current set up, it suggests that, on average, a modest 200 MW of wind capacity could be served by the two 345 kV transmission lines. That would be helpful. Also, connecting to the western grid in Colorado would help reduce the intermittency of wind power production since, if the wind is not blowing in Colorado,

it may be blowing in Kansas and vice versa.

On the other hand Colorado has developed their own substantial wind industry, and the vast majority of the market for Kansas wind is in the population centers to the east. Also if, as expected, Sunflower tries to build a second new plant, the 200 MW of spare capacity on the lines would quickly be displaced by more coal power. So, in the larger scheme of things, these lines will provide only marginal help for the Kansas wind industry.

- 2. Efficiency of the boiler.** According to the handout supplied to legislators by the Governor's office, Holcomb 2 is described as an "ultra supercritical coal generating unit." However the actual agreement signed by the Governor describes the unit as a "super critical coal generating unit." Thus Sunflower is under no legal obligation to use a more efficient *ultra* supercritical boiler. The difference could be as much as 4 efficiency points (42% vs 38%) or about 11%. That's a lot of extra carbon.

In any event "supercritical" is not a concise term and covers a range of boiler efficiencies. Sunflower claims to have reduced their CO2 emission rate in the new proposal to 1850 lb/Mwh from 1900 lb/Mwh in their earlier plan. However this prospect is not enforceable in the agreement. Boiler efficiency needs to be defined in terms of actual boiler design.

- 3. Modifications to (existing) Holcomb 1.** The agreement requires that Sunflower agrees, without changing the existing permit limitations, to meet lower limits for oxides of nitrogen and sulfur dioxide emissions from Holcomb 1. Also Sunflower must install new mercury controls on Holcomb 1 such that the total of mercury emissions from H1 and H2 will not increase from the 327 pounds emitted in 2005 by Holcomb 1. This firms up a verbal commitment made by Sunflower during the Holcomb 2&3 permit proceedings.
- 4. Escape Hatches in the Settlement Agreement.** The agreement includes a number of "escape hatches" for Sunflower that evokes considerable skepticism about the outcome of this enterprise. For example, Sunflower's performance is conditioned upon receiving all the governmental approvals necessary for it to perform the terms of the agreement including the recovery of all costs through its rate structure. The construction of this large coal plant and other elements of the program are likely to generate substantial rate increases both for Sunflower's members in western Kansas and also for Tri-state's members in Colorado.

For example, under a new governor & in the interests of reducing these rate increases, the KCC might allow financing of the coal plant but disallow the new wind farms and energy efficiency. Sunflower would thus be excused from satisfying the promised carbon offsets that were part of the agreement.

Of course the new legislation allows Sunflower to exempt itself from KCC regulation. It's unclear how this would play out. What happens if the Colorado PUC refuses to allow Tri-State to recover its costs? There are a number of other contingencies that would allow Sunflower to escape its obligations if permit or legal proceedings changed the setting for this agreement, even in a minor way.

Overall Conclusions.

The Governor's claim that his settlement with Sunflower will boost the use of renewable energy in Kansas is substantially unfounded. The RES ACT is generally unenforceable and adds nothing to the voluntary program that was already in place. The Governor has vastly exaggerated the extent to which the settlement compensates for, or offsets, the 6.7 million tons of new heat-trapping greenhouse gas emissions that would be generated by Holcomb 2 in the state of Kansas. The settlement and the associated legislation contain ambiguous language and numerous escape clauses whereby Sunflower may avoid some future performance requirements. Thus, we can only conclude that this settlement is a serious step backward for the environment of Kansas and elsewhere.