

Comments from Michael Schlesinger

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I write to reiterate the two recommendations I made last Tuesday at the fourth meeting of the ICCAG.

Recommendation One

The group of ICCAG-selected polices analyzed by ICF International/Systematic Solutions Inc., which does not yet include the two Cap & Trade policies, meets only 30% of Governor Blagojevich's 2020 target of reducing Illinois' greenhouse-gas emissions then to their 1990 values.

Accordingly, as I recommended at the second ICCAG meeting last April in Springfield and again last Tuesday, I recommend including into the ongoing analysis those policies excluded by the 'survey' of the ICCAG members last March which, by WRI's original 'strawman' analysis, have: (1) high to medium potential for decreasing Illinois' emissions of greenhouse gases, and (2) high to medium certainty about their ability to do so.

These policies are listed in the attached Excel file, drawn from the original WRI Excel file, and are color-coded according to the two criteria in this recommendation. (Policy 10 therein may already have been included with Policy 5 in the group selected in the ICCAG survey.) The addition of these policies to the analysis should enhance the ability of ICCAG to meet the Governor's 2020 target.

Recommendation Two

The analysis of the ICCAG-selected polices by ICF International/Systematic Solutions Inc. has shown that the net effect of the group of policies is much smaller than the sum of their individual effects. This is partly the cause of the low percentage contribution of the group of policies so far considered to the Governor's 2020 goal as described in Recommendation One. For this reason the analysis has not tried to determine the contribution of each policy to the net effect of the group of policies.

In response I suggested at Tuesday's meeting a possible method for doing this. This method is described in more detail in the attached Word file.

I recommend that this method be used to determine the contribution of each policy to the net effect of the group of policies. Doing this will illuminate which of the policies are of the greatest importance. This knowledge should be of sufficient value to warrant the additional runs of the analysis model required for this determination.

# A Method to Determine the Contribution of Individual Policies to the Net Effect of a Group of Policies

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Let  $T$  be the net effect of  $N$  policies, and  $T_i$  the net effect absent policy  $i$ . We define the ‘gross contribution’ of policy  $i$  as

$$C_i = T - T_i \quad , \quad i = 1, \dots, N \quad , \quad (1)$$

the sum of which is

$$S = \sum_{i=1}^N C_i \quad . \quad (2)$$

If  $T > S$ , the interaction among the policies creates a net effect that is greater than the sum of its gross contributions – hence the group of policies is ‘synergistic’. If  $T < S$ , the interaction among the policies creates a net effect that is less than the sum of its gross contributions – hence the group of policies is ‘antagonistic’. The latter characterizes the group of policies being considered by Governor Blagojevich’s Climate Change Advisory Group.

To account for the disparity between  $S$  and  $T$ , we define the ‘net contribution’ of policy  $i$  as

$$C'_i = \left( \frac{T}{S} \right) C_i \quad , \quad i = 1, \dots, N \quad (3)$$

such that their sum is equal to  $T$ ,

$$\sum_{i=1}^N C'_i = T \quad . \quad (4)$$

By definition (3),

$$\frac{C'_i}{T} = \frac{C_i}{S} \quad , \quad i = 1, \dots, N \quad . \quad (5)$$

Thus the fraction of the net effect  $T$  of the group of policies given by the net contribution of policy  $i$ ,  $C'_i/T$ , is the same as the fraction of  $S$  given by the gross contribution of policy  $i$ ,  $C_i/S$ . Furthermore,

$$\sum_{i=1}^N \frac{C'_i}{T} = \sum_{i=1}^N \frac{C_i}{S} = 1 \quad . \quad (6)$$

Accordingly, determination of:

- (1)  $C_i$ ,  $i = 1, \dots, N$  in Eq. (1) by running the analysis model  $N+1$  times, once with all policies and  $N$  additional times with all policies except policy  $i = 1, \dots, N$
- (2)  $S$  in Eq. (2) and
- (3)  $C_i/S$ ,  $i = 1, \dots, N$  in Eq. (5)

will allow a ranking of the policies by their fractional contribution to the net effect  $T$  of the group of policies. Doing this will illuminate which of the  $N$  policies are of the greatest importance to the net effect of the group of policies. This knowledge should be of sufficient value to warrant the  $N$  additional runs of the analysis model.