Comments on the specs02.pdf

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SEPTEMBER 1, 2021

In order to assure consistency between the problem formulation and the corresponding model, I would consider replacement of the obviously incorrect inequality (9) by:

1. Equation defining the amounts of each of the fuels as a function of the activities of the applied technologies:
$$\sum_{i \in I} a_{ji} \cdot ACT_i^t = x_j^t, \quad j \in J,\ t \in T \tag{1}$$
where:
   - j denotes fuel type, $J = \{gasoline, diesel\}$,
   - a_{ji} relates the amount of j-th fuel produced by the unit of i-th ACT,
   - x_j^t stands for the amount of j-th fuel produced jointly by all considered technologies at period t.
2. Adding the supply-demand constraint, specification of which depends on the chosen definition of demand. Here we can consider one of the following two options:
   1. If the demand is given for each fuel type, i.e., as d_j^t, then:
   $$x_j^t \geq d_j^t, \quad j \in J,\ t \in T. \tag{2}$$
   2. If the demand is given for a linear aggregation of d_j^t, e.g., by coefficients α_j conforming to:
   $$0 \leq \alpha_j \leq 1,\ \forall j \in J; \quad \sum_{j \in J} \alpha_j = 1. \tag{3}$$
   Thus, the demand is given for a *virtual* (i.e., not actually existing) fuel:
   $$d^t = \sum_{j \in J} \alpha_j \cdot d_j^t, \quad t \in T. \tag{4}$$
   In such a case instead constraint (2) one shall add constraint:
   $$\sum_{j \in J} \alpha_j \cdot x_j^t \geq d^t, \quad t \in T. \tag{5}$$