

Response to Question from Thomas Webler regarding June 12 meeting discussion:

Q. "I just wanted to ask Sven, has anyone calculated what a reprocessing program such as the one he proposed here would do to the carbon density of US nuclear power generated electricity? (I'm looking for a full system - front end and back end - estimate.)"

A. First, I hope I did not come off as suggesting myself or my employer Orano is proposing a recycling program in the U.S. right now. Orano is supportive of the programs being proposed by other groups such as Shine, Oklo, Curio, and Moltex in the U.S. and Canada, but we are not proposing a facility ourselves. Next, I am not aware of anyone having examined the impact on carbon density as a result of the proposed recycling program, which could be rather complex to assess for multiple reasons including: does one assume an existing facility (two exist) or new facility (lots of concrete with CO2 emissions) is used/built to house the reprocessing portion of the recycling program; are diesel or battery (re-juiced by renewable or nuclear power) vehicles implemented to build the facility and ship products around; does one credit the relieved carbon releases associated with the reduced need for uranium mining, milling, conversion, and enrichment to recycled fuel; are new fuel fabrication facilities to be built to make MOX/TRU fuel; are any credits provided for reducing the need to place SNF into a mined repository (reduced mining and transportation); etc. Complex issue which I believe we are finding for most recycling programs in the U.S., especially since the unrecycled material/fuel is cheaper than the recycled material... ultimately I believe the carbon density of nuclear power would go down further in the U.S. with a recycling program, but to have a sustained recycling program, new nuclear would also have to occur because by the time a recycling plant is designed, licensed, and operating, the majority of the existing nuclear power plants may only have a decade or so of remaining licensed operations, which would make a business model rather difficult to justify.

Hope this at least provides a start to a response for Tom (Dr. Webler).

Cordially,
Sven



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