

**Keith Lawton**, an independent transport modeling consultant and former Director of Technical services at the Metro Planning Department in Portland, OR, was invited to this symposium but unable to attend. In the email conversation where we tried to talk him into coming he brought up some interesting statements. While we couldn't get him to present these thoughts in person, we wanted to share his view with the group nevertheless. With his consent, here are some excerpts from two emails:



*Email from 8 March 2017:*

We need much faster, lighter models in order to explore multiple futures where underlying changes in GHG policies, possible shifts in technology, possible shifts in energy resources and so on, might mean futures that are different from current trends. In particular, another (now ex-ODOT) model developer, Brian Gregor has developed a land use scenario developer (LUSDR) that can be run as an integrated model with transportation. It has also been improved and used in other contexts. So consideration of this kind of approach might be in order.

*Email from 12 August 2017*

Our profession faces an existential threat with its focus on calibration and forecasting and detail in the face of looming changes. One of the clearest statements of the problem was made by Michael Wegener in his presentation at the TRB annual meeting January 2009, especially in the last slides in conclusions. To those we can add newer forms of car sharing, Uber/Lyft, and the strong likelihood of autonomous cars well within our log range planning horizons. These are all likely to change both personal auto ownership and cost versus time situations away from current values. I'm sure Michael has more and better thoughts than I on these developing issues.

The need is for fast light models that can do multiple scenarios quickly. Systems Dynamics models come to mind as an example (Forrester, Club of Rome etc.). Another local example is the Land Use Scenario Developer (LUSDR) - Jan 2007 Transportation Research Record, Brian Gregor (then with ODOT, now an independent consultant - "Oregon System Analytics"). He also developed GreenStep, a GHG policy modeling system. We need to be doing policy and risk analysis, assuming various levels of market penetration and response to improve both our thinking and that of decision-makers. We certainly don't need to pretend we can forecast the future, even though that is baked into the travel forecasting bureaucracy that has developed in the USA.

In the US we have been bogged down with the transportation modeling focus on calibration and "validation" that has been transferred to land-use modeling. In reality, land-use dynamics are a series of stochastic decisions and responses involving insufficient information by a large number of agents, and the outcome(s), while following space-time theory are unlikely to form any sort of equilibrium - so a good model should give a range of outcomes, particularly in a region with substantive growth. So how one calibrates that to observed past other than to say the outcome is within the range, I don't know. So we spend time and money on something that is very difficult but maybe not useful?

Sorry about the rant, hopefully some of your participants will raise the issue in a more thoughtful academic manner. I think Paul Waddell's models produce a range of scenarios, (I don't know about speed), but that clients like some sort of average for a single forecast.

Having said all that, we are still better off with an integrated model (even if using equilibrium, as in Metro's model) which gives some consistency and response to policy and investment inputs, paying attention to costs and time and changing household and employment accessibility.