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From Fields to Faucets: Modelling the Dynamics of Rural-Urban Water Transfers

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Growing societal water demands and decreasing water supplies are straining water available for ecosystems and communities in many basins. Increasingly, the only viable option to meet growing urban water demands is to reallocate water from rural agricultural water uses when water supplies have already been fully allocated and it is no longer possible to develop new water supplies. Despite the growing importance of rural-to-urban water transfers, the implications of these transfers on rural prosperity and inequalities are poorly understood. Here, we couple an agent-based model (ABM) with an input-output model to capture the behavior of individual irrigators and how their water transfer decisions propagate through the broader rural economy and shape social dynamics. In this presentation, we will detail our unique modeling framework and share initial results testing multiple hypotheses evaluating how rural-urban water transfers are shaped by social, hydrologic, regulatory, and economic context. This research brings new insights that can be used to evaluate the direct and indirect socioeconomic impacts of water transfers and it can help shape policy to minimize potential negative externalities associated with water transfers.