

Overview of Sophisticated Modeling Approaches and Tools for State Economic Analysis

Method	Tool (Example)	Advantages	Disadvantages	Considerations	When to Use
Input-Output <i>(also called multiplier analysis)</i>	IMPLAN	<ul style="list-style-type: none"> Quantifies the total economic effects of a change in the demand for a given product or service. Can be inexpensive. 	<ul style="list-style-type: none"> Static; multipliers represent only a snapshot of the economy at a given point in time. Generally assumes fixed prices. Typically does not account for substitution effects, supply constraints, and changes in competitiveness or other demographic factors. 	<ul style="list-style-type: none"> Provides rich sectoral detail (NAICS-based). Could be appropriate if the need is to analyze detailed impacts by sector. 	<ul style="list-style-type: none"> Short-term analysis.
Econometric Models	RAND	<ul style="list-style-type: none"> Usually dynamic, can estimate and/or track changes in policy impacts over time. Coefficients are based on historical data and relationships, and statistical methods can be used to assess model credibility. 	<ul style="list-style-type: none"> Historical patterns may not be best indicator or predictor of future relationships. Some econometric models do not allow foresight. 	<ul style="list-style-type: none"> Important to understand if model is myopic or has foresight. 	<ul style="list-style-type: none"> Short- and long-term analysis.
Computable General Equilibrium (CGE) Models		<ul style="list-style-type: none"> Account for substitution effects, supply constraints, and price adjustments. 	<ul style="list-style-type: none"> Not widely available at state level. Most CGE models available at state level are static, although a few are dynamic. 	<ul style="list-style-type: none"> Important to examine how the energy sector is treated within any specific CGE model. 	<ul style="list-style-type: none"> Long- term analysis.
Hybrid	REMI	<ul style="list-style-type: none"> Most sophisticated, combining aspects of all of the above. Dynamic, can be used to analyze both short- and long - term impacts. Can be used to model regional interactions. Flexibility of looking at 2-, 3-, or 4-digit NAICS sectors. 	<ul style="list-style-type: none"> Can be expensive, especially if there is a need to analyze impacts on multiple sub-regions (e.g., counties within a state). Can require a fair amount of massaging inputs, especially with energy sector inputs. 	<ul style="list-style-type: none"> Important to examine how energy sector is treated. May need to update default data to account for most recent energy assumptions 	<ul style="list-style-type: none"> Short- and long-term analysis.