

# Building Social License through Collaborative Cumulative Effects Assessment

Social license to operate – the consent of communities to develop a resource and extract value – is obtained through close working relationships with affected communities, especially in the planning and monitoring phases of a project. Cortex has developed a collaborative spatial modeling approach that is transparent, quantifies the cumulative effects of development on the communities’ values, and engages stakeholders in the planning process.

**Social license must be earned prior to the onset of development**

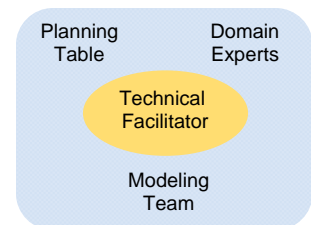
Cumulative effects are defined as the interactions of many incremental and sometimes independent activities, each of which may have an insignificant effect when viewed alone, but become cumulatively significant in their aggregate. Effects are measurable changes, either positive or negative, in values of concern to the communities. Cumulative effects assessment (CEA) quantifies the potential effects of a project when combined with effects of other past, existing, and planned projects and activities.

## Our Approach—Collaboration

Communities, especially First Nations communities, are often concerned about the pace and scope of development within their region or territory, and believe it important to consider the potential cumulative effects from multiple resource developments on environmental, social, and cultural values as part of the planning process – not as a subsequent accommodation to a development plan.

### Collaborative Design and Analysis

Cortex’ primary role in these projects is to aid in the development of a land use plan by building a spatial-temporal model of the region and simulating the disturbances resulting from the planned development. We have found that a collaborative development process, involving communities and stakeholders, fosters clear communication and respect, and leads to a mutually acceptable plan.



The collaborative process proceeds through a series of workshops where the planning table participants (communities and other stakeholders) identify the values of concern – economic, environmental, and cultural – and articulate how the proposed development activities might affect those values. The modeling team facilitates the discussion by building a conceptual model of the development process that relates development activities to the communities’ values. Domain experts such as geologists, wildlife biologists, engineers, or foresters provide technical input and expert opinion to the model specification.

## Building a Landscape Model

The modeling team draws from a suite of spatial modeling tools developed by Cortex that combines resource development scheduling with network infrastructure expansion. Because each planning problem is unique, the modeling

framework is flexible and transparent, and can be customized to fit each planning problem. Innovative features of our CEA modeling approach include:

- spatially explicit placement and scheduling of development activities and associated linear access infrastructure (e.g., roads and pipelines)
- the ability to specify spatial constraints that minimize development impacts on areas with high value (e.g., wildlife habitat and traditional use areas)
- use of graph theory to locate “least cost” linear access corridors
- explicit treatment of uncertainty (i.e., disturbances are expressed as probabilities).

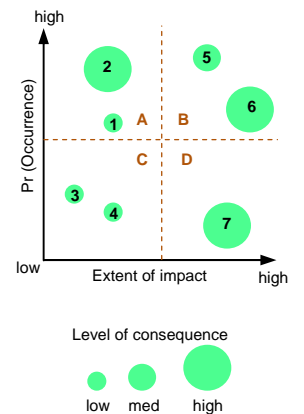
**Spatial modeling enables evaluation of policies that constrain and mitigate impacts**

### Scenario Analysis

In subsequent workshops, two types of scenarios are developed and explored. “Learning” scenarios are used by workshop participants to identify the issues of greatest concern – where the extent of the impacts is greatest and the probability of occurrence is highest. Domain experts prioritize issues to be addressed in the planning process based on the perceived level of consequence to the affected stakeholders.

With this information, the stakeholders can develop policy scenarios that include development constraints and mitigation options, and use the model to explore the trade-offs among policies with respect to their impacts on economic, environmental, and cultural values.

**Identifying Issues of Concern**



### Disturbance Indicators and the Plan

The land use plan is developed collaboratively by the participants, with the modeling team providing tabular and graphic forecasts of indicators of disturbance that are likely to be generated by the development process. These indicators may be simple tables and charts, or more complex spatial-temporal objects such as a map showing the probability of linear disturbances occurring across the landscape, with animated time sequences depicting how these probabilities change over time. Domain experts interpret the indicator forecasts to assess the potential cumulative effects of the plan.

### Collaborative Cumulative Effects Assessment

In our experience, cumulative effects assessment involving communities and stakeholders has been highly effective in achieving commitment to a planning process, fostering acceptance of results, and building social license. In addition to our use of sophisticated, state-of-the-art modeling tools, we believe that our success lies in the communication and confidence-building characteristics of our collaborative approach.

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