

Effects you can identify but have no data for should be so noted in your report.

Although quantifying all effects of a project can be difficult, keep in mind that the credibility of your report will depend to some extent on your ability to identify effects. If your targeted audiences can easily identify effects that you have ignored in your analysis, the credibility of the entire report may be in question.

#### Case 1: Rarotonga Coconut Cream, Inc.—Project Effects

It was easy to identify the obvious effects of the cogeneration project: the reduction of direct emissions as a result of switching from residual oil to distillate as the primary on-site fuel and the reduction of indirect emissions associated with reduced production of electricity by the electric utility. However, after giving the matter some additional thought, RCCI realized that other effects were

associated with the project as well. For example, the number of fuel delivery vehicle trips was reduced by half with the switch from residual oil to distillate and the increased storage capacity. Line losses and the indirect emissions associated with the very long distribution of low voltage electricity were deemed to be negligible and beyond RCCI's ability to calculate.

RCCI listed each of the effects it could identify, but decided not to attempt to quantify any but the first two effects.

Project effects	Contribution to reduction	Significance
Reduce emissions associated with utility electricity production .....	+	Large.
Reduce CO <sub>2</sub> emissions associated with on-site fossil fuel burning (switching from residual to distillate) .....	+	Medium
Reduce transportation-related services .....	+	Small-Medium.
Decrease indirect emissions associated with line losses .....	+	Negligible.

#### Case 2: Rural-Urban Office Management, Inc.—Project Effects

RUOMI contracted with Environmental Security Consulting Organization (ESCO), a local energy service company, to evaluate the costs and benefits of several alternative technologies. After careful evaluation of the use patterns and tenant needs in RUOMI's office complex, ESCO provided a list of two dozen potential energy efficiency improvements and the energy savings and costs associated with each. They explained to RUOMI's management, however, that simply summing across all technologies would not provide an accurate assessment of expected energy savings. Many of the equipment changes would interact with each other, some having negative effects on energy

savings, others having synergistic effects. Further, the type and extent of the interactions would depend upon actual use patterns as well as seasonal variations and weather patterns. Following ESCO's recommendation, RUOMI contracted for 14 of the items on the list.

Because of the complex nature of the energy changes expected from the modifications, ESCO recommended that the resulting effects of the activities be analyzed as one integrated project. This avoided the difficulty of having to sort out the impact of each equipment change. It also made any evaluation for the DOE voluntary reporting program simpler. Since RUOMI was analyzing the projects at the entity level, emissions reductions could be calculated directly from its emissions report. Therefore,

separate identification of each project's effects was unnecessary.

#### Case 3: Illinois-Ohio Unlimited—Project Effects

Identifying all of the effects of IOU's project and reference cases was not a simple exercise. IOU recognized that it needed to consider the effects that its project had (1) on its own operations and emissions, (2) on the emissions of IPP, (3) possibly on the operations of the larger regional power pool, and (4) on the supplier of the PVCs. It was not sure it could accurately estimate all of these effects without incurring unreasonable analysis costs, but it at least wanted to identify them in planning the analysis that would lead to its completed report.

Project effects	Contribution to reduction	Significance
IPP emissions that would have gone up because of additional power purchases are reduced .....	+	Large.
PVC manufacturer emissions do go up .....	-	Small.
Power pool emissions might change .....	?	Unknown.
IOU emissions do go down .....	+	Small.

#### GG-5.3 How Do I Estimate Project Accomplishments?

The final major step in project analysis is estimating emissions levels for both the reference case and project case to determine emissions reductions. The guidelines and supporting documents provide you with a wide range of options for obtaining data and defining the methods for estimating your project's effect on greenhouse gas emissions and carbon sequestration.

First, the guidelines and supporting documents recognize three categories of data.

**Physical data.** This is information that describes the activities involved in your project. For example, how many exit lights were replaced? What was the power requirement of the old and the new lights? How many hectares of trees were planted? What species of trees? How many trees per hectare?

**Default data.** This is information provided by the supporting documents to assist you in evaluating the emissions or sequestration

effects of your project. Using default data increases your ease of reporting (in some cases, allowing you to report when you might not otherwise have enough data). However, using default data may decrease precision and, because the defaults may be conservative, your emissions reductions may appear lower than they actually are. There are two categories of default data:

**Emissions factors.** These are factors that allow you to convert information about a change in energy use to an estimated change in greenhouse gas emissions. Some emissions factors are rather precise. For example, the change in direct emissions of carbon dioxide from a reduction in methane combustion is essentially constant, regardless of when or where the change took place. Other emissions factors, and particularly those for indirect emissions, are less precise. For example, the supporting documents provide emissions factors for electricity on a state-by-state basis. However, the effect that a change in electricity consumption has on emissions

will vary by location within the state, the time of day, and the season that a change occurs.

**Stipulated factors.** These are factors that allow you to convert physical data about your project into estimates of changes in energy use, greenhouse gas emissions or carbon sequestration. The guidelines provide this information for a few types of projects where the scope and nature of the project can be clearly defined and where the effects on emissions can be predicted with relative certainty. For example, the supporting document for the forestry sector provides stipulated factors for converting physical data about tree planting into estimates of carbon sequestration. The supporting document for the residential and commercial buildings sector provides stipulated factors for converting information about certain energy-efficiency projects into estimates of fuel savings. These estimates can be combined with default emissions factors to