

Rarotonga Coconut Cream, Inc. (RCCI) is a small food processing plant in Hawaii. In the past, RCCI purchased its electricity from the local electric utility and produced processing steam from a residual oil-fired boiler. While RCCI's production and energy use have been stable for the past seven years, its energy bills have been growing because of increased electricity rates and oil delivery charges to the company's remote location. Company managers anticipate continued increases in electricity costs as the distribution lines have to be replaced and upgraded over the next five years.

RCCI realized it could cut its energy costs significantly if it installed a cogeneration system to produce its process steam and electricity in a single cogeneration plant fueled by distillate fuel oil. Although the distillate is a higher grade fuel than that currently used, its increased cost is more than offset by the economies realized from the combination of the higher efficiency cogeneration unit and the installation of increased storage capacity, allowing the firm to accept larger, less frequent deliveries. Furthermore, distillate is a cleaner burning fuel oil than residual with lower carbon dioxide emissions per equivalent energy input along with enhanced handling properties. Addition of a backup generator would allow the company to disconnect from the utility transmission and distribution system.

One of RCCI's customers, a grocery wholesaler who was visiting the Rarotonga plant, commented that her company was participating in a Federally sponsored energy-efficiency program and reporting the company's contribution to greenhouse gas emissions reductions through the EPA Act Section 1605(b) voluntary reporting program. While RCCI was undertaking its cogeneration project primarily for financial reasons, it was also aware that the project had some beneficial environmental effects, including the reduction of carbon dioxide emissions associated with switching fossil fuel use and electricity production. RCCI decided that, in the interest of sharing its experience with the cogeneration project, the company would report the results to the DOE program.

The first decision RCCI had to make was whether to report its annual emissions of greenhouse gases. As a small business whose primary purpose for participation in the voluntary reporting program was to publicize its experience with using a cogeneration system in a remote location, RCCI was interested in containing its costs of reporting as much as possible. A full entity-wide emissions report would need to account for direct emissions from its oil burner, agricultural operations, and transportation fleet, and indirect emissions from its electricity use. Estimation of emissions from these sources back to 1987 could be costly and time-consuming. RCCI managers decided instead to focus their limited resources solely on an evaluation of emissions reductions associated with their cogeneration project.

Case 2: Rural-Urban Office Managers, Inc.—Project Description and Emissions Reporting

Note: This example illustrates only one approach to analyzing a project; your

analysis, methods, and calculations will vary depending on your particular circumstances, the geographic location of the project, and other factors.

In the late 1970s, Rural Office Managers built a complex of offices just outside the city of Metropolis. By the mid-1990s, the city had expanded, and the offices, originally designed for low-density occupation, were now experiencing higher density occupation.

In response to the change in its physical surroundings, the company reincorporated as Rural-Urban Office Managers, Inc. (RUOMI). Company officials also realized they needed to update their facilities, particularly their heating, ventilating, and air conditioning (HVAC), system and their lighting system to accommodate the change in use.

Coincidentally, the energy planner for Metropolis contacted RUOMI to explain that the city had enrolled in a new state initiative called Energy Efficient Cities (EEC) that challenges cities to reduce commercial-sector energy consumption by five percent. RUOMI agreed to participate in EEC.

While the emphasis of the EEC program was on reducing energy use, participants were also encouraged to report the indirect effect that their energy conservation activities had on greenhouse gas emissions, that is, the reduction in greenhouse gas emissions at the generating plant resulting from reduced electricity use at RUOMI's offices. When RUOMI managers explored the DOE voluntary greenhouse gas reporting program, they discovered guidance on how to measure both energy savings and associated greenhouse gas emissions. Therefore, as their contractor designed the HVAC and lighting project, RUOMI made sure that the contractor collected all the data RUOMI needed to submit a report.

RUOMI had not preserved a complete set of its energy bills from the late 1980s. Although this information could have been recovered from the Metropolis energy utility, RUOMI managers decided not to attempt to report the company's historic baseline, entity-wide emissions because the generating mix for Metropolis' electricity supply had changed dramatically since the end of the last decade. However, using the data provided in the DOE guidelines and supporting documents, they were able to derive the direct emissions from natural gas combustion and the indirect emissions associated with electricity use, for the two calendar years just prior to the commencement of their project. RUOMI reported emissions for those two years and for each year thereafter.

Case 3: Illinois-Ohio Unlimited—Project Description and Emissions Reporting

Note: This example illustrates only one approach to analyzing a project; your analysis, methods, and calculations will vary depending on your particular circumstances, the geographic location of the project, and other factors.

Illinois-Ohio Unlimited (IOU) is an investor-owned utility operating and serving customers in three midwestern states. During a recent integrated resources planning (IRP) effort, it recognized an emerging inability to meet a rising midday peak-load demand,

even after pursuing an aggressive peak-shaving, demand-side management program. The IRP identified two alternative responses: purchase additional power from the Indiana Plains Project (IPP), an independent power producer that had excess capacity in its natural gas combined cycle units, or install a large array of photovoltaic cells (PVCs) in southern Illinois and Indiana. PVC electricity production was expected to closely match peak-load demands. While the price of PVCs had decreased dramatically as a result of successful Federal and private research, the second option was still more expensive than the first. However, the public utility commissions (PUCs) in all three of the states in which IOU reported encouraged the utility to install the PVCs. The PUCs reasoned that soon PVCs would be economically competitive and this was IOU's opportunity to gain experience with the technology.

Both IOU and its PUCs were concerned, however, that the utility might be inadvertently penalized if subsequent Federal regulations should mandate reductions of emissions of greenhouse gases but not recognize IOU's early reduction effort. IOU decided to report the PVC projects through DOE's voluntary greenhouse gas reporting program. Because IOU knew that use of its information in connection with the requirements of future policy debates would demand complete and accurate information, it kept careful records, and in each case followed the most rigorous requirements of the voluntary reporting guidelines.

As part of its reporting process, IOU reported its entity-wide greenhouse gas emissions for each of the four baseline years, 1987 to 1990, and for every subsequent calendar year. These reports included estimates of emissions from generating processes, IOU fleet vehicle emissions, and office and building operations.

GG-5.1 What Should the Project Be Compared To?

A crucial consideration in evaluating your project's accomplishments is how well you can establish a reference case—that is, an emissions level against which to measure the effects of your project. Note that, once you construct your reference case for a project, that reference case should remain constant for the life of the project. If you revise your reference case, you will need to revise any previous project reports to reflect the revised reference case.

A reference case is often referred to as the "but for" scenario, as in, "but for this project, emissions would have been * * * ." Two possible ways to finish this sentence are: (1) " * * * the same as a previous year" (the basic, or historic, reference case) or (2) " * * * different from any previous year" (the modified reference case, which is adjusted from historic or projected data or based on established standards). Each of these cases is discussed below.

Under this program you may choose between these two approaches. To fulfill your purposes for reporting, you will want your reference case to be clear and understandable. Depending on the nature of and circumstances associated with your operations, a basic reference case (using