Microsoft's Request to Expand the Columbia Data Center in Quincy, WA

Between 2006 and 2008, Microsoft, Yahoo! and Intuit built three data centers in Quincy, Wash. Data centers house the servers that provide e-mail, manage instant messages, and run applications for our computers.

Combined, the data centers have 46 diesel-powered backup generators for use during power failures. Each generator produces about two megawatts of electricity. The generators also produce diesel engine exhaust, which has toxic air pollutants. These pollutants include nitrogen dioxide, carbon monoxide, organic compounds and small particles called diesel engine exhaust particles, or DEEP.

Microsoft's permit request

Microsoft's Columbia Data Center operates on a 70-acre site on the outskirts of Quincy. Microsoft has applied to the Washington Department of Ecology (Ecology) for a permit called a "notice of construction order" (NOC). An NOC is required when industries upgrade or modify their equipment. Its purpose is to protect air quality. Microsoft's NOC application proposes to install and operate 13 additional diesel-powered backup generators to support expanded operations.

Ecology's review of the requested permit

Ecology's review of Microsoft's NOC application has mainly focused on emissions of DEEP. This is because the other toxic air pollutants (TAPs) produced by diesel engines were found not to be a health concern at this site.

Before 2009, DEEP was not regulated as a toxic air pollutant. Recent health studies have shown that DEEP can cause serious health problems. In June 2009, Ecology adopted regulations that require careful consideration of DEEP coming from new or expanding industries or facilities. The NOC is Ecology's tool for evaluating possible health effects of DEEP and other air pollutants.

WHY IT MATTERS

Microsoft needs an Ecology permit to install more diesel-powered generators. As part of the permit review process, Ecology will hold a public hearing where Microsoft and Ecology will explain:

- the results of a health impact analysis;
- proposed emission controls;
- proposed pollution prevention methods; and
- any public health risks the project might pose.

The hearing will be held as shown below:

Quincy, Wash.

Sept. 28, 2010

Quincy City Council Chambers

104 B St. SW

- 5:30 p.m.: Presentations and Questions
- 7 p.m.: Hearing begins

View documents online at: http://www.ecy.wa.gov/programs/air/Tier2/Tier2_final.html

Contact information:

Greg Flibbert

509-329-3452

gfli461@ecy.wa.gov

Special accommodations:

If you need this publication in an alternate format, call the Air Quality Program at 360-407-6800. Persons with hearing loss, call 711 for Washington Relay Service. Persons with a speech disability, call 877-833-6341.

The review process

State law determines how Ecology reviews and makes decisions about NOC permits. There are three possible levels of review:

- **First-tier review: Toxic screening**

  In first-tier review, Ecology or a local air quality agency screens the project to determine if it will emit TAPs. The goal of this review is to prevent air pollution by:

  - controlling new sources of toxic air pollutants,
  - reducing emissions as much as reasonably possible, and
  - maintaining air quality to protect human health and safety.

  If the project emits TAPs, air quality scientists use computer generated models to predict effects on air quality. If the predicted levels of TAPs are more than a specific amount (called an acceptable source impact level, or ASIL), a second-tier review is required.

- **Second-tier review: Health impacts analysis**

  In second-tier review, Ecology determines health impacts of the TAPs emitted by the project. This review estimates the increased cancer risk a person might have over his or her lifetime because of breathing the pollutant the new source would emit. The risk of cancer is then compared to the maximum risk allowed for a second-tier review. This maximum risk is 10 cancers in one million people. The second-tier review also considers the risk of health effects other than cancer, as well as levels of pollutants in the air emitted by other sources.

  If the estimated increased cancer risk is greater than 10 in one million, a third-tier review is required.

- **Third-tier review: Risk management decision**

  In third-tier review, Ecology determines how to best manage the health risks of the emitted TAPs. This review requires the Director of Ecology to evaluate the health risks of the proposed project and decide whether the risks are acceptable. The Director looks at two things in making this decision:

  - use of available preventive measures to reduce pollution, and
  - environmental benefit of the project.

  The Director's decision is preliminary. The permit is not final until the public has had an opportunity to comment. Ecology offers a 30-day public comment period and holds a public hearing to receive formal testimony. Ecology evaluates all comments received before making a final determination about the permit.

Which level of review did Ecology use for Microsoft's permit application?

Ecology used third-tier review for Microsoft's permit application.

Factors considered in Microsoft's third-tier review

Community-wide approach

By itself, the Microsoft expansion would not require a third-tier review. But other data companies are also interested in building or expanding in Quincy. Because the existing and proposed data centers are relatively close together, Ecology decided to use a community-wide approach in reviewing Microsoft's application for the 13 new generators. The community-wide approach adds together the various sources of DEEP, such as trucks and cars on highways, trains on railroads, and backup generators from data centers, to evaluate the overall impact of DEEP. This approach triggered a third-tier review.

Engine operating hours and fuel use

When Microsoft built the Columbia Data Center, DEEP was not yet regulated. The permit Ecology issued at that time allowed more hours of generator use and more fuel use than would likely be allowed today.

As part of the third tier review, Ecology and Microsoft staffs worked together to find ways to minimize potential health effects from DEEP. Microsoft offered to reduce by half the maximum amount of diesel fuel authorized in its existing permits. Microsoft is also limiting the amount of engine testing, maintenance, and other engine use. Each engine will be limited to less than 44 hours of operation per year for electrical bypass. Each of the 13 new engines will be tested for an average of 12 hours per year. Total operation will be, at most, 104 hours per engine per year.

The existing permit allows:

- up to 285 hours of engine operation per engine per year for the original 24 engines; and
- a total of about 900,000 gallons of diesel fuel use per year.

The new permit will allow:

- up to 104 hours of engine operation per engine per year for the additional 13 engines; and
- a total of no more than 450,000 gallons of diesel fuel use per year for all 37 engines (the 24 existing engines plus the 13 new ones).

Even with the addition of new generators, these changes significantly lower the amount of DEEP predicted by the computer models.

Ecology's decision

As a result of the community-wide approach to the permit review, along with Microsoft's willingness to adjust its fuel use and engine operating hours, Ecology's Director decided in August 2010 to approve Microsoft's permit. However, the permit is not considered final until public comment is taken into account.