

Grays Harbor Energy Center

**Proposed Expansion: Units 3 & 4
Water**

What is the proposed expansion?

Grays Harbor Energy (GHE) currently owns and operates a 650 megawatt natural gas-fired power plant known as the Grays Harbor Energy Center in the Satsop Development Park, near Elma, Washington. The existing facility has two combustion turbine generators, one steam turbine generator and a cooling tower.

GHE proposes to expand the facility by adding two more combustion turbine generators, one more steam turbine generator and another cooling tower.

How much water does the existing facility use?

The existing facility is allowed to use up to 9.2 cubic feet per second (cfs) of water. It uses most of this water to condense steam after it passes through the turbine. Water is lost from evaporation in the cooling tower.

Where does the water come from now?

The water is pumped to the Grays Harbor Energy Center from the Ranney wells. The wells are located next to the Chehalis River, about 4 miles west of the Grays Harbor Energy Center.

The Ranney wells pump water from an aquifer located about 120 feet below ground. Studies have shown that about 88% of the water comes from the Chehalis River and 12% is ground water.

Does the Chehalis River have enough water in it?

The flow in the Chehalis River varies from season to season and from year to year. Like many rivers in Washington, it sometimes has low flow conditions.

The Department of Ecology has established "base flow" levels for the stretch of the Chehalis River near the Grays Harbor Energy Center. These base flows vary from as high as 3,800 cfs in December through April, to as low as 550 cfs in August and September.

The river's flow sometimes falls below these base flow levels. In recent years, there have been below-base-flow days as follows:

2009	13 days
2008	17 days
2007	13 days
2006	44 days
2005	44 days

Many of these below-base-flow days were days when the river flow was still fairly high.

The average flow on below-base-flow days and the lowest flow day for each year were:

<u>Year</u>	<u>Average of Below Base Flow Days</u>	<u>Lowest</u>
2009	2,424 cfs	660 cfs
2008	3,080 cfs	1,199 cfs
2007	930 cfs	827 cfs
2006	1,129 cfs	594 cfs
2005	2,943 cfs	2,094 cfs

Does GHE have a water right?

GHE currently has a water authorization from EFSEC that allows it to withdraw up to 9.2 cfs from the Ranney wells.

This water authorization has a low flow restriction. If water in the Chehalis River falls below the base flow levels set by the Department of Ecology, GHE cannot use this water.

During low flow periods, GHE uses water purchased from the Grays Harbor Public Development Authority (PDA). The PDA has a water right without a low flow restriction. The PDA's water also comes from the Ranney wells.

How much water will the expanded facility use?

The expanded facility will withdraw up to 16 cfs of water.

Where will GHE get the water for the expansion?

GHE will continue to use the 9.2 cfs from its existing EFSEC water authorization, and purchase additional water from the PDA.

How will this increased water withdrawal affect the Chehalis River?

The increased water withdrawal will not noticeably affect the Chehalis River. At most, the expansion would withdraw about 6 cfs (88% of 6.8 cfs) more from the river. As explained below, the facility also discharges water to the river upstream of the Ranney wells. The expansion will increase the amount discharged by up to 1.5 cfs. This means that, at the maximum withdrawal rate, the proposed expansion would only reduce the amount of water in the river by about 4.5 cfs (6 cfs withdrawn minus 1.5 cfs discharged).

This is a very small amount of water relative to the amount usually flowing in this stretch of the Chehalis River. The annual average flow is about 7,100 cfs. 4.5 cfs is a small amount even when compared to the lowest flow ever recorded in this stretch of the river of 313 cfs. It would be very difficult to measure such a small difference in the river flow.

Is waste water currently discharged from the facility?

The Grays Harbor Energy Center currently discharges of about 1.5 cfs of process water to the Chehalis River. After the proposed expansion, the facility could discharge up to almost 3 cfs of process water.

Water from the facility is treated before it is discharged. The treated water is then discharged through a pipe and diffuser that are located in the river near the facility. This discharge point is upriver from the Ranney wells.

How will this additional water discharge be regulated?

The Grays Harbor Energy Center currently has a National Pollution Discharge Elimination System (NPDES) Permit. The NPDES permit contains limits and conditions required by state and federal law. The NPDES permit will also regulate the discharge from the proposed expansion.

Will this additional discharge affect water quality in the river?

The NPDES permit contains many requirements that are designed to make sure that the discharge does not hurt the river. Water is treated before discharge in order to comply with the permit.

What kind of fish are in the Chehalis River?

GHE's application for the proposed expansion contains a complete list of the fish found in the Chehalis River. In general, the variety of fish is similar to that found in other rivers in Western Washington. Native resident fish include mountain whitefish, sculpin, three-spine stickleback and Olympia mud minnow. Fish such as carp, catfish and perch have also been introduced into the river. Resident and sea-run cutthroat trout are found in the river, and several salmon species migrate through this area of the Chehalis River.

Will the additional water used by the proposed expansion of the facility hurt these fish?

The water withdrawals are not expected to affect the fish in the river. As explained above, the amount of water withdrawn is a very small percentage of the water in the

river. It is not expected to affect the quality of fish habitat.

Will the water discharged by the expanded facility hurt fish or other living things in the river?

The NPDES permit contains requirements designed to make sure that the discharge will not hurt fish or other living things. For example, the permit requires the water discharged to be no warmer than 16 degrees Celsius, so that it will not raise the river temperature above a level that is safe for bull trout and salmon.

Who will GHE have to answer questions at EFSEC's meetings?

During the Council meeting in July, GHE will have three panelists available to answer questions concerning water.

Cameron Ochiltree is a hydrologist at URS Corporation. He will be able to answer questions about water flow in the Chehalis River, the potential impacts of water withdrawals, and the potential impacts of waste water discharges.

Kevin Warner is the environmental engineer at the Grays Harbor Energy Center. He is familiar with the current operations and the NPDES permit.

Bill Mavros is a fish biologist at URS Corporation. He will be able to address questions about how water use and waste water discharge may affect fish.

Where can you find additional information?

More information about water can be found in the Application for Amendment 5 to the Site Certification Agreement, Section 4.1.1 (Oct. 30, 2009).

It is available on the EFSEC website at:
[http://www.efsec.wa.gov/Satsop Amend%205.shtml](http://www.efsec.wa.gov/Satsop_Amend%205.shtml)