

US EPA ARCHIVE DOCUMENT



Project XL Progress Report

Department of Defense: Elmendorf Air Force Base—ENVVEST

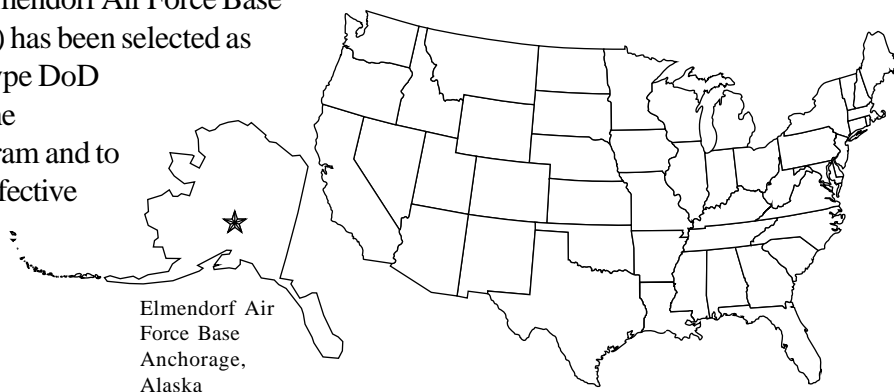


ENVVEST

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In 1995, the U.S. Environmental Protection Agency (EPA) embarked on a series of innovative initiatives in an effort to test new ways to achieve greater public health and environmental protection at a more reasonable cost. Through Project XL, which stands for eXcellence and Leadership, EPA enters into specific project agreements with public or private sector sponsors to test regulatory, policy, and procedural alternatives that will produce data and experiences to help the Agency make improvements in the current system of environmental protection. The goal of Project XL is to implement 50 projects that will test ways of producing superior environmental performance with improved economic efficiencies, while increasing public participation through active stakeholder processes. As of January 2001, EPA has reached its goal of 50 projects in the implementation phase. EPA Project XL Progress Reports provide overviews of the status of XL projects that are implementing Final Project Agreements (FPAs). The progress reports are available on the Internet via EPA's Project XL Web site at <http://www.epa.gov/Project XL>. Hard copies may be obtained by contacting the Office of Policy Economics and Innovation's (formerly the Office of Reinvention) Project XL general information number at 202-260-5754. Additional information on Project XL is available on the Web site or by contacting the general information number. The information and data presented in the January 2001 Progress Report is current as of December 2000.

As part of the Clinton Administration's initiative to reinvent environmental regulations, EPA and the DoD signed a Memorandum of Agreement (MOA) in 1995 that established how the two agencies would interact during DoD's implementation of the ENVVEST program. The MOA established a framework for developing ENVVEST pilot programs at three to five DoD facilities. The ENVVEST program emphasizes regulatory compliance through pollution prevention and provides an alternative to prescriptive regulatory requirements through a performance-based environmental management system designed to attain superior environmental results. Elmendorf Air Force Base (Elmendorf AFB) has been selected as one of the prototype DoD facilities to pilot the ENVVEST program and to implement cost-effective environmental protection.



Elmendorf Air Force Base
Anchorage,
Alaska

Major Milestones

April 2, 1998
Elmendorf AFB XL
Proposal Submitted

December 15, 1999
Final Project Agreement
Signed

March 24, 2000
Initial ENVVEST
Progress Report
Completed

Summer 2000
Construction of
Compressed Natural Gas
Station

December, 2004
Final Commitments
to Be Met

Background

Elmendorf AFB is located just north of Anchorage, the largest city in Alaska. Elmendorf AFB covers approximately 13,000 acres; it has more than 800 buildings, two runways, more than 150 miles of roads, and more than 7,500 personnel from all branches of the United States and Canadian armed forces. With civilian workers, retirees, and their families, the number of people associated with Elmendorf rises to nearly 25,000. The 3rd Wing, the host unit for Elmendorf AFB provides air superiority and air defense forces to the commander-in-chief, North American Aerospace Defense Command, as well as mobile, composite tactical air, airlift, and airborne warning and control forces to the commander-in-chief, U.S. Pacific Command.

Anchorage is currently classified as a serious nonattainment area for the Federal carbon monoxide (CO) standard under the Clean Air Act (CAA) National Ambient Air Quality Standards (NAAQS). The southern boundary of the base borders the Anchorage nonattainment area. Elmendorf is not included in the nonattainment area, therefore reductions in pollution levels for Elmendorf AFB are not required under Title V requirements, a national permit system that applies to major stationary sources of air pollution under the CAA. Nevertheless, one of the goals of this XL/ENVVEST project is emissions reductions on the base, including CO.

Through this XL/ENVVEST project, Elmendorf AFB will increase its pollution prevention activities using funding that would otherwise be spent complying with the administrative requirements of Title V, such as permitting, record keeping, monitoring, and training. Elmendorf AFB estimates that overall administrative and permit management costs will decrease by about 80 percent, yielding about \$1.5 million in savings over six years. These realized cost savings will be directed toward pollution prevention (P2) activities. A P2 project already identified involves installing a compressed natural gas (CNG) fueling station, purchasing new CNG vehicles, and converting certain base fleet vehicles to allow them to use CNG as an alternative fuel. Additional projects, with an emphasis on those that reduce hazardous air contaminants (HACs), are under consideration. Potential areas of HAC reduction include surface coating operations, internal combustion engines, incinerators, gasoline distribution, and aircraft engine testing.

The Experiment

The Elmendorf AFB project aims to finance P2 activities with the cost savings and paperwork reduction associated with simplified Title V requirements. Under the simplified requirements, the Elmendorf central heating and power plant (CH&PP) will be permitted as the base's only major stationary source, based on its emissions of nitrogen oxides (NO_x) (greater than 100 tons per year) and CO (greater than 100 tons per year). In addition, the Alaska Department of Environmental Conservation (ADEC) will approve potential to emit (PTE) limits for the remaining sources, substantially reducing reporting requirements. Without these changes, Elmendorf AFB would be required to include over 100 sources of regulated contaminants for its Title V permit. In total, these administrative changes are expected to result in savings of approximately \$1.5 million over a six year period. This savings will be reinvested in pollution prevention activities on base, with an emphasis on hazardous air contaminants (HACs) emission reduction. This XL/ENVVEST project will demonstrate the feasibility of alternative-fuel vehicles in the Anchorage area, and reduce air pollution base wide through pollution prevention at multiple minor sources.

The Flexibility

As an incentive to achieve superior environmental performance at Elmendorf AFB, EPA and the ADEC are allowing more flexible and cost-effective processes for regulatory management. The statutory programs affecting the Elmendorf XL/ENVVEST project are the CAA programs administered by EPA's Office of Air Quality

Planning and Standards.

Streamlining the Regulatory Process. The XL/ENVVEST project will provide Elmendorf AFB with relief from ADEC's operating permit program for major stationary sources by creating a single, comprehensive permit that includes all CAA requirements for a major stationary source of air pollution. The traditional Alaska operating permit program would treat Elmendorf AFB as a single air contaminant emission source, with 106 sources of regulated contaminants that would need to be addressed in its Title V permit. Under these circumstances, the costs of obtaining and maintaining a Title V permit would be substantial. Under this XL project, the Title V permit would apply to only a small segment of Elmendorf AFB, including one source that is a major stationary source, the CH&PP, and several others that are subject to new source performance standards. ADEC will establish PTE limits for the other sources at Elmendorf AFB to ensure that they are not considered major sources. To enable the regulatory changes under this XL/ENVVEST project, ADEC will work toward inclusion of the major source guidance for Elmendorf AFB into the Alaska Air Quality Control regulations, 18 AAC 50.

Most of the flexibility provided by this project could have been obtained without Project XL through a August 2, 1996, policy guidance document entitled, "Major Source Determinations for Military Installations under the Air Toxics New Source Review, and Title V Operating Permit Programs for the Clean Air Act," and with the imposition of PTE limits on Elmendorf AFB. However, by participating in this XL Project, Elmendorf AFB obtains the flexibility to redirect money that would have been spent on Title V costs into P2 projects. Elmendorf AFB has agreed to invest the expected savings of \$1.5 million into projects that will result in actual emission reductions. Without the XL/ENVVEST project, those programs probably would have not otherwise occurred.

Stationary Source Classification. The EPA policy guidance recognizes that military installations possess unique characteristics warranting flexibility in major source determinations similar to that available to industry under EPA's regulations and policies. The guidance allows military installations under common control to divide into functionally distinct emitting activities. The primary activities of the installation and their emission sources can be separated from the support activities and their emission sources. For example, separating emission sources directly supporting flight line operations from emission sources such as housing. To that end, the base has utilized the guidance to divide the 106 emission sources into 11 functionally distinct emitting activities by using common control classifications and the Standard Industrial Classification (SIC) Code manual. Major stationary sources covered by National Emission Standards for Hazardous Air Pollutants (NESHAPs) and New Source Performance Standards under the CAA will be included in the Title V permit, if applicable. On the basis of PTE, a number of emission sources would be considered major stationary sources. However, only one of the emission sources, the CH&PP, is a truly major stationary source based on its actual emissions of NO_x (greater than 100 tons per year) and CO (greater than 100 tons per year).

Potential to Emit Limits. In addition, Elmendorf AFB will use a three-pronged mechanism to limit the PTE of several other activities occurring on base. Because actual emissions from many of these sources are considerably below applicable major source thresholds, the base will seek and apply limits on the PTE from these sources. The base will apply for Preapproved Limits for 39 emergency diesel engines under Alaska permits. The base will also apply for a state permit to cover base-wide HACs under Owner Requested Limits set forth in existing state regulations (18 AAC 50.225). These alternative emission standards create practicably enforceable limits and are a necessary part of the permitting scheme under this project. The administrative costs associated with these PTE limits are expected to be minimal because the base already tracks much of the necessary reporting information. Approval of these limits means Elmendorf will not be a major source of HACs, and therefore the administrative burden of reporting is greatly reduced. Without approval of these limits, Elmendorf could be considered a major source of HACs and be required to have a base-wide permit. A revised Emissions Inventory will be submitted to ADEC as the basis for establishing the limits. PTE limits are expected to be in place by January 2001.

Environmental Stewardship. Elmendorf AFB is committed to spending the savings derived from streamlining its environmental management costs on P2 opportunities. One such P2 project identified in the FPA involves installation of CNG fueling station, the purchase of new CNG vehicles, and the conversion of certain base fleet vehicles to be capable of using CNG as an alternative fuel. Another P2 project being considered is the implementation of Clean Cam Technology Systems (CCTS) at Elmendorf AFB. By replacing engine parts in diesel-powered engines, CCTS can dramatically reduce air emissions, including CO, NO_x, and particulate matter. Elmendorf AFB plans to install CCTS on at least one of the base's A/M32A-86 generators to test the effectiveness of CCTS in the arctic climate, with an eye to using the technology if it proves appropriate. Elmendorf AFB has assembled a list of other feasible P2 opportunities available at the base, along with the estimated costs and environmental benefits of each opportunity. In addition, EPA, the State of Alaska, and Elmendorf AFB have expressed a preference for HAC reduction projects. A supplemental agreement setting forth the specific additional P2 opportunities to be implemented will be developed with the assistance of stakeholders.

Promoting Innovation and System Change

Project XL provides EPA opportunities to test and implement approaches that protect the environment and advance collaboration with stakeholders. EPA is continually identifying specific ways in which XL projects are helping to promote innovation and system change. The innovations and system changes that have emerged from the Elmendorf AFB XL project are described below.

Permit Reform. Title V of the Clean Air Act establishes an approach to source-specific regulation by requiring each state to develop and implement an operating permit program for all Major Stationary Sources (42 U.S.C. § 7661 *et seq.*) of air pollution and other stationary sources subject to requirements under Sections 111, 112, 129, or Title IV of the Clean Air Act. The current Alaska operating permit program would treat the entire Elmendorf installation as a single air contaminant [AS 46.14.990(1)] emission source for the purpose of determining if a state-issued Clean Air Act Title V permit is required. The 1996 base emissions inventory, in support of the base's Title V permit application, lists 106 sources of regulated contaminants [AS 46.14.990(23)] that would need to be addressed in the permit. Using the current Alaska permitting approach, the costs of obtaining and maintaining a Title V permit would be very significant for the installation. Under this XL project, the Title V permit would apply to only one source that is a major stationary source, the CH&PP, and several others that are subject to new source performance standards. ADEC will establish PTE limits for the remaining sources that will not be permitted to ensure that they are not considered major sources.

Federal Budget Process. As with other ENVVEST projects, Elmendorf AFB is testing new approaches to the Federal budgeting process. In the past, DoD's budgeting process allowed resources meant for environmental protection to be used only for meeting legally mandated environmental protection levels. New approaches are being tested to create a budget process that allows DoD to spend resources on pollution prevention programs, innovative technologies, and other cost-effective approaches that will reduce emissions below legally mandated levels.

Project Commitment Summary

This table and the environmental performance section that follows summarize progress in meeting commitments described in the FPA for the Elmendorf AFB XL/ENVVEST project:

Commitment	Status
Elmendorf Commitments	
Construction of compressed natural gas fueling station.	Construction complete in summer 2000, and celebrated with a ribbon cutting ceremony in September 2000.
Fleet vehicle conversion.	Elmendorf AFB purchased conversions for 15 vehicles in 2000 and anticipates 11 more in 2001.
Supplementary Agreement on additional pollution prevention project(s).	To be completed before end of FY 2001.
EPA Commitments	
Provide technical and administrative assistance to Elmendorf and ADEC.	As needed.
Review and, as appropriate, approve regulatory relief approaches adopted by ADEC.	As needed.
ADEC Commitments	
Provide technical assistance to Elmendorf regarding opportunities for HAC and criteria pollutant emission reductions.	As needed.
Issue a Title V permit.	Anticipated following establishment of PTE limits.
Assist Elmendorf with efforts to calculate the PTE of emission sources on the base.	Draft Emissions Inventory has been submitted to ADEC.

Environmental Performance

This section summarizes the progress in meeting the environmental performance described in the FPA for Elmendorf AFB. The goals and baselines for specific pollution prevention activities and performance objectives will be developed in a supplemental agreement, to be signed no later than September 30, 2001.

Pollution Prevention Activities. One of the pollution prevention projects that will take place is the installation of CNG fueling station on the base, the conversion of certain base fleet vehicles to be capable of using CNG as well as the procurement of dual fuel and dedicated CNG fuel vehicles. Converted vehicles will be tested to ensure they result in reduced emissions, manufactured dual fuel and dedicated fuel vehicles will also be analyzed to ensure positive environmental performance. Each type of vehicle to be converted will be tested before conversion to establish emission baselines, and following conversion to ensure positive results. The completion of the CNG fueling station at Elmendorf, one of the first in the country located on an Air Force base, and the conversion of Elmendorf vehicles will facilitate the Air Force in meeting its commitments to the Energy Policy Act of 1992 by reducing dependence on foreign sources of petroleum and reducing air emissions, and a separate executive order requiring Federal agencies to acquire alternative fuel vehicles.

The cleaner-burning CNG vehicles will contribute to reduced CO emissions for Elmendorf and will demonstrate that this level of technology is achievable and beneficial in Anchorage and Alaska. CO is a product of the incomplete combustion of fossil fuels and is emitted directly from the tailpipe of vehicles. CO enters the bloodstream through the lungs and forms carboxyhemoglobin, a compound that inhibits the blood's capacity to carry oxygen. People with heart disease are particularly sensitive to CO poisoning. Infants, the elderly, and individuals with respiratory diseases are also sensitive receptors. CO can also affect healthy people by impairing the capacity to exercise, visual perception, manual dexterity, learning functions, and the ability to perform complex tasks.



Construction of the CNG fueling station was completed during the summer, 2000, and commemorated in a ribbon-cutting ceremony in September. Elmendorf purchased 15 conversions to dual-fuel systems in fiscal year 2000, with the first set of five vehicles delivered to the Base in November. Eleven more vehicle conversions are planned during fiscal year 2001.



Elmendorf AFB is also considering the installation of CCTS in generators on base. By replacing engine parts in diesel-powered engines, CCTS can dramatically reduce air emissions. Limited testing of the technology at Brooks Air Force Base, Texas, has demonstrated significant air emission reductions on generators: hydrocarbon emissions by 44 percent, CO emissions by 43 percent, NO_x emissions by 77 percent, and particulate matter emissions by 52 percent. Elmendorf AFB plans to install CCTS on at least one of the base's 86 generators to test the effectiveness of CCTS in the arctic climate. If such dramatic emissions reductions are seen, it is likely that the XL/ENVVEST project will include further CCTS conversions.

Elmendorf has assembled a list of other feasible pollution prevention opportunities available at the base, along with the estimated costs and environmental benefits of each opportunity. In conjunction with ADEC and Elmendorf AFB, additional pollution prevention activities will be determined. A supplemental agreement will be signed no later than September 30, 2001, setting forth the opportunities selected and any necessary measures to ensure their performance.

Stakeholder Participation

Elmendorf AFB held several public meetings to request input on the project, including presenting the proposal to three local community councils. These meetings were publicized through local newspapers and personal contacts. The comment and EPA's response are attached to the FPA. Public meetings will continue throughout the course of the project, in order to further examine and decide on additional HAC emissions reduction and P2 activities. Finally, the Restoration Advisory Board (RAB), which includes representatives of most of the local air quality organizations, meets regularly and is an avenue by which the XL project status is reported to stakeholders. The goal of the RAB, created in 1994, is to provide a forum to enhance the communication and coordination among the Air Force, EPA, ADEC, and affected communities in response to actions undertaken by the Environmental Restoration Program at Elmendorf. Elmendorf representatives brief the RAB on all important

environmental issues, including the progress of the XL/ENVVEST project.

The XL/ENVVEST Team at Elmendorf AFB will inform the stakeholders as the project evolves, in accordance with the Public Outreach Plan. Elmendorf AFB will prepare progress reports at least annually, in conjunction with submittal of the facility operating report to ADEC or on a basis agreed to by all stakeholders, which will document progress toward the goals of this XL project.

Six-Month Outlook

The key focus areas for continued successful implementation of the FPA over the next six months will be the following:

- Complete and open the CNG station.
- Continue implementation of CNG vehicle conversion on base and procure additional dual-fuel vehicles.
- Negotiate and select additional pollution prevention activities with stakeholders.
- Establish HAC PTE limits with ADEC.

Project Contacts

- Dave Bennett, Elmendorf Air Force Base, (907)-552-2760.
- Will Garvey, Federal Facilities/ENVVEST, (703)-564-2458.
- John Stone, State of Alaska, (907)-465-5103.
- David Bray, EPA Region 10, (206)-553-4253.
- Nancy Birnbaum, EPA Headquarters, (202)-260-2601.

Information Sources

The information sources used to develop this progress report include (1) the Final Project Agreement for the Elmendorf AFB XL/ENVVEST project (December 1999), (2) supplementary proposal materials, and (3) the Initial ENVVEST Progress Report (March 24, 2000). The information sources are current through July 2000.

Glossary

Baseline: The measure by which future environmental performance can be compared.

Clean Air Act (CAA): The CAA is the comprehensive Federal law that regulates air emissions from area, stationary, and mobile sources. This law authorizes the EPA to establish National Ambient Air Quality Standards (NAAQS) to protect public health and the environment.

Compressed Natural Gas (CNG): A purified form of natural gas (methane), suitable for use as a substitute for gasoline or diesel fuel.

Criteria Air Pollutants: The CAA requires EPA to set NAAQS for certain pollutants known to be hazardous to human health. EPA has identified and set standards to protect human health and welfare for six criteria air pollutants—ozone, carbon monoxide, total suspended particulates, sulfur dioxide, lead, and nitrogen oxide. EPA must describe the characteristics and potential health and welfare effects of these pollutants. It is on this basis that standards are set or revised.

Major Stationary Source: In a nonattainment area, any stationary pollutant source with the potential to emit more than 100 tons per year is considered a major stationary source. The cutoff emissions levels are lower for more seriously polluted areas. The classification is used to determine the applicability of Prevention of Significant Deterioration (PSD) and New Source Review (NSR) regulations.

Memorandum of Agreement (MOA): An agreement between Federal agencies or divisions within an agency or department that delineates tasks, jurisdictions, standard operating procedures, or other matters that the agencies are duly authorized and directed to conduct.

Minor Source: New emissions sources or modifications to existing emissions sources that do not exceed NAAQS emission levels.

National Ambient Air Quality Standards (NAAQS): Regulations promulgated by EPA under the CAA for six criteria pollutants—sulfur dioxide, particulate matter, nitrogen dioxide, carbon monoxide, ozone, and lead—to protect the public from toxic emissions to the atmosphere.

Nitrogen Oxides (NO_x): An air pollutant that is the result of photochemical reactions of nitric oxide in ambient air. Typically, it is a product of combustion from transportation and stationary sources. It is a major contributor to the formation of ozone in the troposphere, photochemical smog, and acid deposition.

Nonattainment Area: A geographic area in which the level of a criteria air pollutant is higher than the level allowed by the Federal standards. A single geographic area may have acceptable levels of one criteria air pollutant but unacceptable levels of one or more other criteria air pollutants; thus, an area can be both in attainment and nonattainment at the same time. It has been estimated that 60 percent of Americans live in nonattainment areas. Based on the severity of the problem, nonattainment areas are classified as marginal, moderate, serious, severe, and extreme.

Potential to Emit (PTE): A pollution source's total PTE is determined by a two-step process. First, the source's potential emissions at maximum physical capacity are established. This is then reduced by any recognized limits on the source's emissions, such as limits on rates of production, hours of operation, and type and amount of fuel burned or materials processed. The PTE is a significant factor in regulations implementing the Title V operating permits program.

Retrofit: To furnish with new parts or equipment not available at the time of manufacture.

Stationary Source: A stationary place or object from which pollutants are released. Stationary sources include power plants, gas stations, incinerators, and houses.

Title V of the Clean Air Act: Title V establishes a Federal operating permit program that applies to any major stationary facility or source of air pollution. The purpose of the operating permits program is to ensure compliance with all applicable requirements of the CAA. Under the program, permits are issued by states or, when a state fails to carry out the CAA satisfactorily, by EPA. The permit includes information on which pollutants are being released, how much may be released, and what kinds of steps the source's owner or operator is taking to reduce pollution, including plans to monitor the pollution.