options in the costs used in the cost-effectiveness analysis. Consistent with this, for this effluent guidelines, EPA has included capital expenditures and operation and maintenance, but not the cost of the lost oil/gas production in its analysis of the incremental cost-effectiveness of different technology options. EPA does consider the lost production as an economic impact on this industry, and has included lost production in its economic impact analysis. During the interagency review a question was raised whether EPA should treat the lost oil/gas production as a compliance cost to the facility. EPA solicits comments on: (1) Whether the possibly permanent loss in oil/gas production associated with premature closing of these wells may be different from lower production of manufacturing goods that occurs in any production period as a result of higher production costs, and (2) whether or not the lost production of oil/gas should be considered when determining the cost-effectiveness on the technology options for this industry.

B. Economic Methodology

The EIA provides the results of a number of measures of economic impact resulting from the proposed Coastal Guidelines. These measures include production losses (measured in terms of total lifetime production lost, losses in net present value (NPV)[2] of production, and years of production lost), impacts on federal and state revenues; impacts on firms; impacts on employment; impacts on inflation and balance of trade; impacts on small businesses; and impacts on new sources in terms of barriers to entry. All impacts measured in this EIA do not take into account the requirements of the EPA Region VI General Permits for the Coastal Oil and Gas Industry covering disposal of produced water.

These impacts are also based on the assumption that oil prices will remain, in real terms, approximately $18 per barrel over the timeframe of the analysis. This assumption is substantiated, at least for this decade, by recent industry forecasts. Note that if the price of oil changes significantly, impacts could also change.

1. Gulf of Mexico

EPA used the 1993 Coastal Oil and Gas Questionnaire authorized under section 308 of the CWA to obtain the information necessary to model impacts at wells determined to be currently discharging and which were determined to be continuing to discharge at least through the third quarter of 1996. Incremental compliance costs specific to these wells or the produced water separation and treatment facilities associated with these wells (prorated on a cost per barrel basis to make them well-specific) were used to derive the incremental costs to the affected wells. By Gulf of Mexico, the EIA does not generally include Gulf coastal facilities in Alabama and Florida, since coastal operators in these states are already required to meet zero discharge, and thus, these facilities would not incur additional costs from this rule.

A financial model showing cash flow over a maximum 30-year time frame (or less if a well's flow becomes negative before 30 years) was developed and adapted to each well using well-specific data in the Questionnaire. Costs included in the models include those associated with current production costs and revenues, which were extrapolated over the lifetime of the project to establish baseline lifetime production. Other baseline summary statistics included years of economic lifetime, corporate cost per barrel of oil equivalent (BOE), and net present value of lifetime production. Then, capital and annual operating and maintenance (O&M) costs associated with various regulatory options were added to the baseline costs. The model recalculates the economic lifetime of the wells, annualizes the regulatory costs over the new project lifetime, and recalculates production and financial summary statistics. Well impacts were evaluated by determining the change from the baseline values caused by the increased regulatory costs. Production losses are measured as reductions in hydrocarbon extraction resulting from immediate closure of existing wells and curtailed lifetimes. These were based on the decrease in production and decrease in net present values for the wells induced by the regulatory costs. That is, if a well became unprofitable with the additional costs, it was assumed to shut in, either in the first year or earlier than it might have under baseline assumptions.

To provide more accuracy in estimating the total annual costs to the Gulf of Mexico (GOM) coastal oil and gas industry, these costs were derived using state permit data on discharging facilities and compliance cost estimates developed on a per-facility basis. Thus costs were not based on extrapolations from survey data. These costs are pre-tax (although the financial models account for impacts based on the appropriate post-tax costs). EPA re-emphasizes that this analysis assumes that the Region VI permit for produced water is not part of the baseline scenario.

EPA also analyzed secondary impacts of the regulation. These include: revenue losses to the federal government due to tax shields on expenditures and loss of taxable revenues, revenue losses to State governments through lower severance tax payments and royalties, changes in the balance of trade and inflation, employment losses (both primary and secondary) based on production losses and firm failures, and employment gains (involved with manufacturing, installing, and operating pollution control equipment). Impacts on new sources also are investigated and a regulatory flexibility analysis is performed.

2. Cook Inlet

The same type of financial model used in the Gulf of Mexico portion of the analysis was adapted to model 14 platforms (one currently shut in but with potential for future production) in the Cook Inlet. The same types of impacts from a variety of regulatory options for this region also were estimated. One difference between the Cook Inlet model and the Gulf model is that the Cook Inlet model operates at the platform level instead of the well level. Impacts are evaluated for platforms, whose production rates change with the addition of new and recompleted wells.

C. Summary of Costs and Economic Impacts

1. Overview of Economic Analysis

The economic analysis has five major components: (1) An estimate of the number of existing wells (Gulf of Mexico) and platforms (Cook Inlet) and projected wells/platforms that incur costs under this rule; (2) an estimate of the annual aggregate (pre-tax) cost of complying with the regulation using capital and O&M costs per Cook Inlet platform or Gulf of Mexico treatment facility as estimated in the Development Document; (3) use of an economic model to evaluate per-well/platform impacts on production and economic life; (4) an evaluation of impacts on firms, future oil and gas production, Federal and State revenues, balance of trade, employment and other secondary effects; and (5) the performance of a regulatory flexibility analysis as required under the Regulatory Flexibility Act to determine whether impacts on small firms are disproportionate to those on large firms.

[2] Net present value is the total stream of production revenues minus costs over a period of years discounted back to present value, under the assumption that a future dollar is worth less than a dollar now.